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THE CASTRATION OF CRYPTORCHID OR CRYPSORCHID HORSES.*

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BEFORE considering the subject of Castration, I think it only proper to notice briefly the anatomy of the parts with which we have to deal, so that we may the better understand the relations of the fructifying organs, and the situations in which they are to be found.

In the early stage of embryonic life, the testicles make their appearance in the sub-lumbar region of the abdominal cavity, above the peritoneum, and immediately posterior to the kidneys. With the development of the fœtus the testicle acquires sufficient weight to depress the peritoneum, thus allowing it to descend towards the inguinal ring, to which it is guided by the *gubernaculum testis*, and through the intervention of which it is directly connected with the scrotum.

In its normal condition, as it descends into the inguinal canal it acquires several coverings. The first of these, from the inferior layer of the peritoneum, which forms attachments to the testicle in common with the gubernaculum, receives the name of *tunica vaginalis reflexa;* the second, from the *transversalis abdominis* muscle, is known as the *infundibuliform* fascia; thirdly,

* Read before the Montreal Veterinary Medical Association, 1878-79.

the *cremasteric* muscle and fascia; and lastly, the *inter-columnar fascia*, from the external abdominal. Whereas, in the abdominal variety of cryptorchids, the testicle, not receiving the already-named coverings, has only that obtained from the upper layer of peritoneum, which has received the name of *tunica vaginalis propria*. According to French writers, those animals are called "cryptorchids" whose testicles are not in their normal situation, but are placed in parts abnormal. By the vulgar they are called "originals," "ridglings," or "rigs."

This anomaly appears to have been first described by Oliver de Serres, and it afterwards received attention from a number of veterinary practitioners, particularly D'Arboval, who wrote on the manner of operating when the testicle does not pass the inguinal ring. Nevertheless, it is to the French veterinarians, MM. Goubaux and Follin, that veterinary science is indebted for the most precise notions on cryptorchid horses. In addition to the labours of these authorities, in 1875 M. Degive, clinical professor at the Veterinary School of Cureghem, Brussels, published an excellent memoir on the subject.

The abdominal situation of the testicles results from their arrest in passing into the scrotum. It is known that in certain species of animals the work of descent of the testicle into the scrotum takes place at the moment of birth, while in others—notably the solipeds, whose testicles remain engaged in the inguinal canal many months after birth before they become lodged in the scrotum—the testicles are sometimes arrested in the abdomen, sometimes at the entrance of the inguinal canal, or in that canal.

These different situations of the testicles constitute the various kinds of cryptorchids. This vice of conformation may be met with on one or both sides, and constitutes, as the case may be, the single or the double cryptorchid. But that which is most important to know—especially from a surgical point of view—is the situation of the testicle itself. We shall, after the example of M. Goubaux, divide cryptorchids into two classes. In the first—called "abdominal cryptorchids" by M. Degive—the testicle has not passed the superior orifice of the inguinal canal, and floats in the abdomen. In the second, or "inguinal cryp-

torchid," the testicle has passed entirely or in part into the orifice before-mentioned, and is engaged more or less, as the case may be, in the inguinal canal.

1*st. Abdominal Crypsorchia.*—The testicle floats in the abdomen at the extremity of a serous band or cord, analogous to the suspensory ligament of the ovary in the female. It may be connected by adhesions to some part of the wall of the abdomen, or with some of the surrounding organs.

In some very rare cases the vaginal sheath is absent; or it is at the utmost represented, says M. Degive, by a slight intra-abdominal depression, to which we may give the name of "vaginal fossa." In some cases one ascertains the existence of a rudimentary vaginal sheath which contains part of the epididymus and *gubernaculum testis*, or only a portion of the latter.

2*nd. Inguinal Crypsorchia.*—This variety is characterized by the presence of a vaginal sheath more developed than in the preceding case, and in which is found the testicle.

The inguinal testicle generally offers less volume than when it is in its normal situation. At times it is considerably atrophied from granular degenerations. Besides, the semen is profoundly modified, and to such a degree that no spermatozoa are present in it.

However, all crypsorchids are not sterile, as the stallion "La Cloture," notwithstanding his testicles being absent from the scrotum, got colts.

Etiology.—Most authors attribute the testicular displacement to a defect in the size of the testicle and the openings which it has to traverse. Whatever it may be, one thing is certain, and that is that hereditary predisposition plays a large *rôle* in the production of crypsorchis. Thus the stallion "La Cloture" was the son of a monorchid. Moreover, M. Degive, who has operated on thirty-seven cryptorchids, discovered that five at least had been produced by a stallion with one testicle not in the scrotum.

CHARACTERS OF CRYPSORCHID ANIMALS.—The signs by which one recognises such animals is obtained from an examination of the scrotal region, of the general character of the animal, and by an examination in exploring the rectum. Thus, the crypsorchid has the character of the entire male horse, shown by

erection of his penis, and all that ardour and impetuosity which is not met with to the same degree in a castrated horse. But before pronouncing upon the existence of the crypsorchid, it is necessary to take into account the age of the subject. In the solipeds the testicles are generally down from the sixth to the tenth month. However, regarding that there have been different opinions held amongst writers on the subject. Thus, Van Haelst advises to wait three years before deciding. M. Degive thinks that, as a general rule, the animal should be regarded as a cryptorchid after two years of age, if the testicles have not appeared in their normal situation. The question of age being laid aside, the absence of cicatrices in the scrotal region evidently indicates the cryptorchid ; and yet their presence does not always permit us to say that the anomaly does not exist, as they may be fraudulently made there. If one has doubts on the subject, it is generally sufficient to put the horse with a mare, when he will most likely conduct himself like a stallion. A further proof is the finding of spermatozoa in the fluid ejaculated by such animals. Exploration by the rectum is especially recommended, as it constitutes an excellent means of diagnosis, while at the same time it makes known to the surgeon the difficulties that may be offered in the castration. In the case of unilateral cryptorchids, the hand in the rectum recognises one of the peritoneal orifices remaining free, while on the opposite side that opening is not to be found ; and besides, one feels the testicle, which at the same time may be made to move by traction with the hand. In a case of this nature, M. Lenglen says that when the testicle is grasped and pressure brought to bear on it, that the animal flinches and shows signs of pain. It is a remarkable fact that the displaced or hidden testicle is generally found on the left side. In thirty-seven cases, M. Degive met with but three in which it was on the right side. In three subjects of the thirty-seven both testicles were absent from the scrotum.

INCONVENIENCES PRESENTED BY CRYPTORCHIDS.—They are passionate, impetuous, yelling—often having an erection ; consequently cannot be put with mares, or worked with them, which renders them useless for certain kinds of labour, and also makes them dangerous. In the stable they try to kick and bite their

neighbours, and at times are very vicious, injuring those who attend on them. Besides, they are not docile as a rule. This being the case, it is necessary to submit such animals to the operation of emasculation ; and this all the more as the results obtained by M. Degive of Brussels, and by a Belgian veterinarian, have been very favourable to the operation. Thus M. Degive reports that in thirty-seven operations only four died, the remaining thirty-three being successful, although twenty-nine of them presented the abdominal variety.

Before operating, Degive keeps the crypsorchid eight days on a spare diet, giving him daily a dose of tincture of arnica in the morning in a small quantity of cold water; and to this medicine he attributes the absence of Peritonitis after the operation.

OPERATION.—The different methods are distinguished according to the case—whether it is an abdominal or inguinal cryptorchid.

A. *Inguinal variety of Crypsorchis.*—This operation was first described by Hurtrel d'Arboval, next by Van Haelst. The operation is divided into two principal stages, the horse being cast in the ordinary way. *1st Stage.*—The incision through the scrotum and vaginal sheath is made as in ordinary castration. Divide the layer of yellow fibrous tissue and dartos which extends over this region of the groin. Then dissect the vaginal sheath, and introduce the hand, tearing through the tissues with the fingers. When the sheath has been sufficiently dilated, says the above author, we can sometimes push the finger high enough to grasp the testicle and hold it, whilst we cut to it as in ordinary castration. If the testicle is too deeply situated to be seized by the fingers, we may have recourse to a pair of forceps to hold the organ while it is being removed by means of the écraseur. *2nd Stage.*—The vaginal sheath being opened, the testicle appears more or less in view, and can be removed either by the écraseur, the actual cautery, by torsion, or by clams.

M. Degive recommends the first-mentioned method of removal.

B. CASTRATION OF ABDOMINAL VARIETY OF CRYPTORCHIDS BY PERFORATION OF THE INGUINAL PASSAGE.—This mode is the one which appears to present the best chance of suc-

cess. According to M. Degive, it has for a long time been practised by the Flemish castrators; and Van Seymostier asserts that it gives the most satisfactory results. Moreover, M. Degive thinks that the proportion of successful operations on cryptorchids may be as large as that in ordinary castration. To operate with ease, cast the animal on his back, and have the four extremities well flexed against the trunk, fixing them two and two, by means of a solid ring level with and behind each elbow, fastened by strong cords embracing the superior and lateral regions of the breast, and a little behind the withers. To keep the animal on his back, place on each side of him some bundles of straw. In this position the operator can introduce his hand into the inguinal canal, without being seriously inconvenienced by the muscular contractions of the animal.

Operation for Abdominal variety.—Incise the scrotum in the ordinary manner; then open the external inguinal ring, and tear with the fingers the loose and abundant connective tissue which covers the inferior orifice of the inguinal canal. "We know," says M. Degive, "that our object is attained when the hand can be carried with ease through the ring, in which it is well to feel the internal commisure of the prepubic tendon of the abdominal muscles. One should avoid, during this manipulation, the forming of useless *culs-de-sac* in one or the other direction, and especially towards the anterior parts, as inflammatory products may accumulate and produce unpleasant consequences."

The operator should then perforate the inguinal canal. To do this, he places himself behind the animal, then with the left hand, for example, he opens the inguinal canal. He must be careful to open the proper passage, pushing with slowness in the right direction, communicating to the hand from time to time an easy, rotating movement. Thanks to pressure, combined with the rotatory movement, the hand opens a passage through the inguinal canal, and at last arrives at the peritoneum, at which he will be able to feel the bowels. The operator tears through this last layer by making pressure on it with one of the fingers, afterwards enlarging the orifice made by passing the other fingers through it, so that the hand, or part of it, may be introduced into the abdomen.

Two principal difficulties may present themselves during these manœuvres—1st, the natural resistance of the inguinal ring; 2nd, the compression resulting from the contractions of the abdominal muscles and the muscles of the hind extremity. They may be overcome if one operates slowly. M. Degive confesses that in one case he made a false passage from his hand becoming fatigued; this killed the animal, owing to the intestines becoming inflamed. Since then he has had in some cases to suspend operating and rest the fatigued hand, and very frequently he has had to remove the hand from the inguinal canal, or from the abdominal cavity.

To facilitate the introduction of the hand into the parts, it should be well lubricated with olive oil, and made cone-shaped. Some recommend the hand being moistened with tincture of arnica.

2nd Stage. Prehension of the Testicle.—In the majority of cases, it is sufficient to introduce three fingers through the peritoneal opening in order to seize the testicle or part of the epididymus. In difficult cases it is the cord that serves as a guide to arrive at the testicle or the tail of the epididymus. When the hand grasps one of these, it draws it out by a slow and continued traction. If it pulls upon the epididymus alone, the testicle soon follows and appears at the external orifice of the inguinal canal.

3rd Stage. Ablation of the Testicle.—The testicle may be removed by any of the various methods in general use. But that which is by all means preferable and most commonly adopted, is by the écraseur.

From contributions by French and German authors, this operation seems by no means of recent adoption, though not in general use either by French or German practitioners; while to English authors it seems to be almost, if not quite, unknown—even the situations in which the testicle may be found are not alluded to; and cryptorchids in general practice have been considered almost, if not entirely, beyond interference, especially so far as immediate operating is concerned, although various means have been resorted to in endeavouring to bring down the hidden testicle. Amongst the most humane of these in general use is that of changing the bearings of the hind feet, and—less so—blister-

ing the groin and smoking the animal's head nearly to suffocation. As to the efficacy of such measures, I will allow you to judge.

I am sorry to say that it seems to be a failing of our best English authorities not to have considered the operation of due value to be worthy the attention it is deserving; though whether this may have been from lack of interest or fear of impropriety, I will not attempt to say.

In this place I consider it only proper to speak of the by no means recent adoption and most successful practice of this operation by "Farmer Miles," of Illinois, U.S. Mr. Miles commenced castrating cryptorchids more than twenty-five years ago, though he can scarcely be said to have followed it as a business for more than ten or twelve years, during which time he has castrated from one hundred to two hundred and fifty every year, with a mortality not exceeding three per cent. This, as you see, is an exceptionally small percentage, even for ordinary castration.

I consider his success to be greatly due to his mode of casting and securing the animals, and cannot too strongly recommend you all to see this method at your earliest convenience.

The advantages which to me seem to recommend this method of securing are three in number—

(1.) Diminished risk in casting;

(2.) The easy posture in which the animal is retained;

(3.) The facilities afforded the operator.

Of these, the first, by the ordinary modes of casting, involves more or less danger to the animal—but this depends greatly on the way he is allowed to fall. By Mr. Miles' method danger is obviated, as it prevents all floundering, and instead of the animal falling on his side, shoulder or neck, he is made to sit on his haunches, and then to roll over on his side.

The easy posture depends on securing the limbs separately, and in a flexed position, thus preventing all muscular cramps, admitting of no leverage, and so allowing of no injury.

The advantages afforded the operator are—1stly. That he need be in no haste, as the animal being secured in so nearly the natural position of lying, no great amount of inconvenience is inflicted upon him, even if retained for hours; 2ndly. By means

of the "spreader" the hind-legs are kept apart, thus giving sufficient room, besides preventing the inconvenience referred to by M. Degive—"That of compression resulting from contractions, mainly of the muscles of the hind extremities;" and in addition it leaves the inguinal canal free for the passage of the hand, and affords a more easy and convenient receptacle for the testicle.

In securing and removing the testicle Mr. Miles' method does not differ materially from that of M. Degive, except that he seldom finds it necessary to pass his hand within the abdominal cavity, unless there be some abnormal enlargement, or adhesions of the testicle to the neighbouring parts. Of the former, the specimen before you is an example of encysted hydrocele, which I witnessed Mr. Miles remove during the summer of 1876. Discovering the testicle to be uncommonly large, and finding that he could not remove it by traction on the cord with the left hand in the inguinal canal, he endeavoured to assist by pressure from above with the right hand in rectum, but as the testicle was too large to pass the inguinal ring, and having decided that it contained fluid, he passed a trocar through the inguinal canal and drew off three pints of fluid, after which the testicle descended easily and was removed by the écraseur.

Of the adherent variety, I have met with but one case, and in this the testicle was apparently attached to the ilio-lumbar aponeurosis, close to the external iliac artery. With the right hand in the rectum, and the left hand within the inguinal ring, I succeeded, after about thirty minutes' manipulating, in bringing the testicle into the inguinal canal; but I was obliged to pass the écraseur well into the canal, as the adhesions would not allow of the testicles descending as far as the scrotum.

The after-treatment of the animal consists in keeping the wound well open, and allowing sufficient exercise. Mr. Miles prefers that the animal should be kept at his usual work, thus ensuring exercise, besides preventing union of the parts too early, and obtaining free drainage.

OSTEO-POROSIS OCCURRING AMONG PONIES IN MINES.

BY W. WOODS, F.R.C.V.S., WIGAN.

I YESTERDAY (June 15th) forwarded to the Brown Institution the limb of an aged grey pony, which I had destroyed on the previous day. The following is the history of the case:—The animal, a pit pony, suddenly exhibited symptoms of excessive lameness while at work. She was with difficulty walked to her stable—a distance of about 400 yards—and I was then requested to see her. On my arrival I found the following symptoms: She was lying on her side, breathing quickly, and perspiring. The pulse was eighty per minute and hard. When compelled to arise—a difficult matter—she exhibited indications of Laminitis affecting all of the feet; but, unlike animals suffering from that disease in its early stage, this pony could not remain standing for longer than a minute at a time. The bowels were constipated throughout the attack, and there was almost complete suppression of urine. After three days' medical treatment the animal was destroyed, as ultimate recovery was considered impossible, both knees being in the same condition, and the perforans tendon of one hind limb was separated from its attachment to the os pedis, this being caused by the creature endeavouring to stand.

I would not have troubled you with this case, but I have had seven or eight others belonging to the same firm (the Wigan Coal and Iron Company) in a similar condition—some with the perforans tendon torn away from the os pedis in two, or even three feet; the animals in each case walked on the fetlock pad. The subcutaneous connective tissue of the limbs is highly inflamed, and the ligaments and tendons appear to be partially split up into shreds.

I may state that all the ponies, with one exception, have been foreign ones; but most of them have been at work in the coal-pits for several years—one, a very severe case, had been more than ten years in the same mine. The ordinary food is oats, beans, bran, a liberal quantity of Indian corn and hay—all of the very best quality. The same kind of provender is supplied to

upwards of 200 horses and ponies ; but I have had no cases like the above except in the mines.

The patients were in every instance in good working condition. They were always suddenly attacked, and usually within an hour after commencing their daily work. Several slight cases, which were at once brought out of the pits, recovered. They were put in loose boxes at the farm, and treated with a mild laxative (Ol. lini), followed by mineral tonics and chlorate of potass dissolved in the drinking water. Mashes and grass were given as food.

For two years I have had similar cases occurring about May or June in ponies belonging to the same firm, and two cases belonging to another firm several miles distant. Can you suggest the cause of the disease? Is it the Indian corn being given in too great quantities? The water appears to be good, but it is now in the hands of the analyst. Any particulars I have not mentioned I shall be glad to forward, as I am anxious to know if any preventive measures can be adopted.

[Mr. Banham, M.R.C.V.S., after examining the specimen soon after its arrival, states that he discovered great subcutaneous inflammation, with swelling, gelatinous infiltration, and blood extravasations in the connective tissue, extending from the foot to above the knee. When the skin was removed, it was found that the extensor tendons (magnus and obliquus), as well as the internal ligaments of the carpus, had broken away from their attachments to the bones. The cartilages covering the metacarpals, as well as those on the lower tier of the carpal bones, were also rough and commencing to ulcerate. The suspensory ligament (superior sesamoid) also appeared to be affected, although it had not given way at its attachment; though, if the animal had lived, it would probably have become detached. Mr. Duguid inspected the specimen, and concluded it was analogous to what the late Professor Varnell described as Osteo-porosis, the "big head" of the Americans ; but this will be easier decided when the bones are macerated. It would also be advisable to ascertain whether any of the other bones were affected.

In reply to our opinion and inquiries, Mr. Woods replies :—"I am quite aware that foreign ponies are not so dense in their

fibrous tissues as our own, and I quite agree with Mr. Duguid that the cases are those of Osteo-porosis; but, in my opinion, they are not quite like those recorded by Professor Varnell, as both sexes were equally affected, and one pony was at least twelve years old, and had been at work in the mine for seven or eight years. I have forwarded you half of lower jaw and portion of pelvis, which, I believe, belong to the same pony as the leg already sent. I think you will come to the same conclusion that I have—that they are cases of Osteo-porosis; but it appears singular to me that the ponies should look, work, and feed well up to the time the ligamentous attachments give way. The disease made its appearance last year, as well as in this, immediately after the Whitweek holidays. This year I took the precaution of having the ponies exercised every day."

No pathological change was discovered in the other bones sent for inspection.

The disease is in all likelihood due to some infraction of the laws of hygiene. We could certainly recommend that but little maize be given, and on rest days less stimulating food than is allowed on working days.]

THE ATMOSPHERIC CAUSE OF DISEASE.—IS OZONE A CAUSE?

BY ROBERT WARD, F.R.C.V.S., LONDON.

THE reason why I have selected Ozone for the subject of my thesis is because I have been somewhat interested with a lecture delivered to the members of the Kingscote Agricultural Society, at the Hunters' Hall, Kingscote, in the month of February last, by Professor Mayer, of the Cirencester Agricultural College. Professor Mayer proceeds, firstly, to discuss the influence certain conditions of the atmosphere have on animal and vegetable life; then the importance to be attached to oxygen, not only as a supporter of all living organisms, but from the grand part it plays as Nature's *scavenger*, rendering inert noxious compounds, changing them to their original elements, or rendering them innocuous. From this he proceeds to describe Ozone,

and to explain the derivation of the term.* After alluding to its production by artificial means, he proceeds to account for its presence in the atmosphere; then the means employed to test its presence. I simply mention all this to show that he went into the subject with some earnestness and detail; thus to attract the attention of, and lead his audience to follow him. But as I proceed with his lecture I am compelled to halt; indeed, I was somewhat surprised when I came to the conclusion he had arrived at, as the result of certain experiments instituted by Dr. Day. The Professor states:—"I think it safe to assert that many of the epidemic (*epizoötic?*) diseases which affect our domesticated animals at certain seasons, such as Catarrh, Bronchitis, and Pleuro-pneumonia, may be attributed to an excess of Ozone in the atmosphere."

To substantiate his deduction, he then proceeds to state the observations of Dr. Moffat during particular conditions of the atmosphere, in which phosphorescences and the presence of Ozone were observed; then cases of Apoplexy, Epilepsy, sudden death, Neuralgia, and premature uterine action (abortion) occurred.

It has always been maintained that Ozone—that is, true atmospheric Ozone—is not deleterious to health, but the very opposite. Take our sailors, for instance, who are of all men most exposed to an ozoniferous atmosphere, and they must meet with it in all its forms of excess. Their health does not appear to be deteriorated, but, on the other hand, augmented; they are tough, sinewy, and tanned.

In his recent excellent treatise on "Ozone and Autozone," Dr. Fox says, referring to the observations of Dr. Moffat:—"It is not necessary to ascribe the advent of these calamities to an increase of Ozone, for a sudden decrease in the barometic pressure is sufficient to account for the Apoplexy and sudden death. Moreover, healthy people of highly nervous temperaments are often sensible of a diminished pressure of air by toothache, pains in the joints, and other nervous symptoms."

The theory set forth by Professor Mayer is met by the conclu-

* Ὀξη, a stench; or Ὀξω, I smell.

sions of Dr. Fox, respecting diseases in man and animals, and requires data more reliable than the Professor furnishes us with to establish it. For on this subject Dr. Fox says:—"Firstly, a deficiency of Ozone in the air in all probability predisposes to diseases, particularly of the epidemic form, by virtue of the depressing and debilitating effects of such air, in consequence of its feeble power of oxidizing animal *débris;* and, secondly, a permanent diminution of the normal amount of active oxygen probably favours the development of chronic diseases, characterised by mal-nutrition, imperfect oxidation, and degeneration of tissue."

From this we may infer that a deficiency of Ozone is deleterious to health, according to Dr. Fox's conclusions; and that an excess of Ozone, according to Professor Mayer, is also deleterious.

Against the Professor's theory we have the following from Dr. Fox:—"The evidence in favour of the supposed connection between Influenza and an excess of atmospheric Ozone is far from being decisive; for this disease is sometimes prevalent during periods when Ozone is not observed in excess."

Again, Dr. Richardson says on this point:—"We must yield that Ozone in excess, as we produce it in the laboratory, induces certain symptoms of disease; but as yet we know of *no instance* in which an excess sufficient to produce the same symptoms exists in nature."

An air so charged as to produce the particular symptoms enumerated, would require no test to prove the presence of Ozone, for it would be an *irrespirable* air, and would affect with varying intensity all who breathe it. It is most remarkable that Ozone has a different influence on various animals. Mice, it appears, are destroyed if the air be impregnated with even the $\frac{1}{5,000}$ part of it; rats are affected before guinea-pigs, and these before rabbits. On the other hand, birds appear to tolerate a highly-ozonized atmosphere; frogs, if supplied with water, any amount.

Dr. Ireland remarked in the hospital at Umballa, Bengal, that a sudden decrease in Ozone was followed by a threefold increase in the number of patients, and by the *prevalence* of Rheumatism

and Influenza; and that, when there was an increase of ozonic reaction, the patients recovered.

It has been remarked by Mr. Harris, of Worthing, that during the prevalence of N.E. and E. winds, when no Ozone is present in the air, there was greater frequency of irritative affections of the mucous membranes of the throat and air-passages.

In the Island of Skye, Catarrh is never observed; yet Ozone is most abundant there. And in answer to the question, "Is there any reason for thinking that atmospheric air ever contains Ozone enough to produce catarrhal symptoms?" Dr. Fox says:—"Although many observers, such as Scoutetten, Wood, Richardson, and myself, have experimented in the laboratory and experienced these symptoms when the air has contained an excess of Ozone, yet no such effects are produced amongst those who breathe it freely diluted with air, when the odour is notwithstanding distinctly perceptible."

Professor Mayer, in his lecture, I take it, referred to atmospheric Ozone, and its influence on animals; therefore I have endeavoured, as simply and plainly as possible, to place before your readers the opinions of authors who have made this subject their special study, in order to prove that Ozone is not held to be such an atmospheric cause of disease as Professor Mayer was led to infer at Kingscote.

Dr. Fox says:—"Science does not at present enable us, unfortunately, to make any positive statement as to what is, or is not, an unhealthy atmosphere."

Believing, however, that Ozone is vital air *plus* force, that it decomposes some of the offensive and deleterious products of putrefaction, and that it exists naturally in the air we breathe, we may justifiably *infer* that an impairment of the active power of the air, in consequence of the "consumption" of its Ozone, may contribute largely to the formation of an unhealthy atmosphere.

Ozone has been termed Nature's grand disinfectant, because it removes noxious odours, and *must therefore arrest infection and destroy pestilential miasmata, also germs of all epidemic diseases.* But we are not certain of this, or rather that Ozone does possess the power of oxidizing either such vitalized matter or the *materies morbi* of any affection.

Where Ozone abounds there we find a pure invigorating air—at the seaside, on the moors, on the mountain, or on the ocean; there we find men and animals cheerful, their appearance most healthy, a skin rosy or tanned from exposure, whilst the only diseases met with are those of a sthenic form.

The study of Ozone is now one of deep interest in the medical world, and must be equally so to the modern veterinarian. But in order that this study bear fruit, facts must be accepted before hypothesis.

OBSTRUCTION OF THE INTESTINE, DUE TO ACCUMULATION OF FAT AND MUSCULAR DEGENERATION.

BY J. W. HILL, F.R.C.V.S., WOLVERHAMPTON.

ON June 2nd we received a message to proceed to Endon, the seat of J. Pritchard, Esq., to examine a fat heifer which was being got up for show, and which had lately taken to "straining"; at the same time "her bowels were open, and when straining, a bloody discharge came away." Proceeding to Endon on the same day, I found the heifer—a three-years-old Hereford—apparently in perfect health, but every few minutes she strained and passed a small quantity of fæculent matter of a normal character. She was enormously fat, so much so that the anus and vulva were scarcely perceptible. I suggested an examination *per rectum*, and immediately carried it out. I was able to introduce my hand about twelve inches, when I found the passage suddenly constricted to such an extent that I could scarcely pass two fingers. This confirmed to some extent the opinion I had given, that probably the bowel was "growing up," which the veterinary surgeon who had previously attended her had assured him was not so. Such being the case, the bailiff thought it better not to run the risk of keeping her until Christmas, he having had a similar case before; but until some decision was arrived at, I prescribed chlorodyne mixture to allay the straining, and ordered a pint of linseed oil to be given three times a week, as well as laxative food, strictly prohibiting anything in the way of diet which had a constipating tendency.

On June 6th I saw the animal again, and her condition was much the same. I was told a butcher had been communicated with. On the 12th I saw her slaughtered, and on examination the parts affected presented a most unusual appearance. I have forwarded forty inches of the bowel adjoining the anus. You will observe that the whole of it is surrounded by an immense layer of solid fat, and between this and the intestine is a dense grey substance, one-eighth of an inch in thickness, running the entire length. The stricture commences twelve inches from the anus, and for thirty-six inches is continued—in one or two places scarcely admitting the little finger; the mucous membrane is inflamed, more so in some parts than in others. The mass of bowel sent weighs twenty pounds. Whether it is a case of fatty degeneration, fibrous stricture, or cancer, you will be able to determine. I am at present inclined to believe it is the two former combined, but three medical men lean to the latter. I have since learned that the heifer had been home-fed since she was a calf, and that her age was about three years when she was slaughtered; she had never been unwell before, but her grandsire died about four years ago from the same morbid condition.

[Dr. Thin made a careful microscopical examination of two small portions of the morbid specimen above alluded to, and reports that the mass between the peritoneal and muscular coats of the bowel is simply fat; the muscular layer, mucosa and epithelium, being healthy. He adds: "I suppose it is correct to speak of such a mass as a 'tumour,' although it was not encapsulated. It is certainly safe to call it 'growth.'"]

PNEUMO-ENTERITIS CONTAGIOSA (SWINE PLAGUE).

BY W. DAY, JUNR., M.R.C.V.S., VETERINARY INSPECTOR, WARMINSTER, AND J. R. LEESON, M.B., M.C., M.R.C.S., LATE DEMONSTRATOR OF ANATOMY, ST. THOMAS' HOSPITAL, LONDON.

AT the present time, when the so-called "Pig Typhoid" is so very prevalent, and much controversy and diversity of opinion exist in reference to this disease, especially as to its being analogous to human Typhoid (hence the popular, but, to my thinking, erroneous name), I thought it might be interesting to some of

the members of the veterinary profession to give an outline of a few of the cases which have recently come under my supervision in the capacity of veterinary inspector. In these cases I have been aided by Dr. Leeson, who was staying with me at the time, and at my request accompanied me; and we together made careful *post-mortem* examinations on each case, from which he has taken the subjoined notes.

Eight pigs were purchased by a farmer, at a neighbouring market, and taken by a dealer of this town (Warminster) with some of his own to Frome market, where they were not disposed of; but instead of returning home direct, they were kept from Thursday, the 19th of June, to Saturday, the 21st, in one of his sties, where pigs had been condemned for this disease some few weeks previously. From the farmer's statement, it appears that on Monday the 23rd, they showed signs of illness—loss of appetite, etc.—from which they partially recovered, and appeared better until the end of the week, when the symptoms increased in four of them, and on Monday, the 7th of July, the other four which appeared to be well were removed to another sty. On Wednesday one of the four affected ones died, and the case was reported to me. On my arrival, the pig that was dead exhibited externally the usual signs of this disease, viz., the peculiar patchy purple discoloration of the skin on the abdomen, inside the thighs, under the throat, and back of the ears. The three pigs on being disturbed from the litter on which they were lying, showed unmistakable symptoms in their staggering gait, arched backs, cough, laborious breathing, etc. On examination the abdomen and thighs of two of them were spotted, and one ulcerated; but the other did not show these external symptoms. I certified as to the disease, and they were slaughtered by order of the Executive Committee. The following *post-mortem* notes will show the ravages of this disease in each case. In one case in which the other animal had been dead twenty-eight hours before the *post-mortem* examination, there was no *Rigor mortis*. The others being examined immediately after they were killed, and then buried whilst warm, there was no opportunity to note the degree or time at which *Rigor mortis* would have occurred.

Skin.—Hair rough, and coat generally somewhat "staring." The belly, inner side of thighs, and the ears, presented in three

of the cases numerous hæmorrhagic patches, mostly about the size of a split pea; and in two of them large irregular blotches, of a purple colour. In one case the skin covering the hæmorrhage had ulcerated, and exuded a thin serum. There were none of the "rose-coloured" spots seen which have been described by other observers: in fact, all the abnormal appearances presented by the skin were referable to the changes produced, both in colour and otherwise, by the extravasated blood. On opening the abdominal cavity the same appearances were seen, although to a less marked extent. Numerous subperitoneal hæmorrhages generally about the size of a millet seed, but frequently much smaller, often being only mere specks, were seen on the posterior surface of the diaphragm, inner surface of the abdominal walls, and on the colon. In two cases, a small amount of lymph was found in the peritoneal cavity, but there was very little effusion, and no signs of general Peritonitis. On opening the intestinal canal, it presented well-marked appearances of Enteritis, commencing in the lower part of the ileum, being very marked about the ileo-cæcal valve (in one case the swelling being so great as almost to close the opening), but having its chief situation throughout the colon, the mucous membrane of which was highly injected and swollen, being sprinkled over with numerous petechiæ. In two instances, in the lower half of the colon, several sub-mucous hæmorrhage were found, varying in size from a split bean to that of a filbert. There was an excess of mucus. No ulcerations were seen, but had the animals lived, the mucous membrane covering the large blood patches would probably in three or four days have broken down, leaving ulcerating surfaces. There was no "diphtheritic exudation" seen. The bowels were filled with rather firm and consistent fæces; but in one case the fæces were fluid, and of a yellowish colour. The rectum was less affected, so that the chief stress of the intestinal affection fell upon the upper part of the colon, and was most marked in its upper three-fourths.

Spleen.—In all cases the spleen appeared normal, not resembling, in the slightest degree, the state of that organ so commonly found in human Typhoid and other fevers.

Liver.—In three cases this was quite normal, in the fourth it was congested, and its substance friable.

Kidneys.—These were in all cases free from any pathological changes observable by the naked eye, though their cortex was somewhat pale.

Supra-renal capsules healthy.

Pancreas appeared healthy.

Pericardium contained in all cases brownish fluid, its serous lining being sprinkled with sub-serous hæmorrhages.

Heart.—Was pale and flabby, and free from hæmorrhagic spots.

The Pleuræ contained, in three cases, a small amount of brownish fluid; in one case there were numerous recent adhesions; in two cases the surface of the lungs was covered towards their lower parts by recent lymph; in the fourth case the pleuræ appeared healthy. In three of the cases the lungs presented, in their lower third, well-marked signs of Broncho-Lobular Pneumonia; the substance of the lung sinking in water, being grey and dense; on section the lung substance was grey and mottled, but no casts of the tubes could be squeezed out of the inflamed areas. The upper parts of the lungs were somewhat emphysematous. The bronchi were filled with tenacious mucus. In the fourth case, the lung affection was very slight, but there were indications of commencing Lobular Pneumonia toward their lower margins. The muscles were pale and flabby, and did not show any patches of hæmorrhage.

Remarks.—From the above it will be seen that the stress of the disease fell chiefly upon the lungs, the pig which died certainly succumbed to his lung affection, and not to that of the intestines. And, no doubt, had the remainder been allowed to live, they also would have died from the same cause.

Dr. Leeson states that the hæmorrhages both in the skin and under the mucous membranes, reminded him of Hæmorrhagic Small Pox and Scarlet Fever; and the *post-mortem* appearances in no way resemble those of human Typhoid. I entirely agree with him in thinking the sooner the name of "Typhoid" is dropped in connection with this disease the better, as it is misleading in every way; and that in future it would be desirable to adhere to that of "Pneumo-Enteritis-Contagiosa," which has been given to it by Dr. Klein, and which exactly describes the disease as witnessed in our cases.

ON HÆMORRHAGE AFTER CASTRATION.

BY A. E. MACGILLIVRAY, V.S., BANFF, N.B.

THE evidence in the recent great trial, Smith *v.* Marking, having brought the above topic rather prominently before the profession and general public, I intend, with the editor's permission, giving the substance of my experience as to the same.

Hæmorrhage after castration, as every practical professional man will allow, is one of the most aggravating and disagreeable sequelæ of this important operation. Just when one thinks the operation well over, the *gelding* having but got on to his legs, and is in the act of being led away, some onlooker remarks, "He is bleeding awfully!" This is of course, in general, a mere bagatelle, and may happen at any time; the colt is ordered five or ten minutes' travelling exercise before being housed up, and almost invariably one hears no more of bleeding.

But it sometimes *will* happen that the hæmorrhage persists, not only drop by drop, but actually goes on in continual small streams; or it may cease for two or three minutes, and then come away with a gush, and go on thus off and on for hours. This is simply terrible to the operator, and as for the owner—he, poor man, is in despair!

Generally the chief question now is, What is to be done? Plugging, stitching, pressure—or what? My own plan is to endeavour to ascertain where the hæmorrhage is coming from. Is it simply from the wound, or is it from some part of the recently divided internal structures? If the hæmorrhage is merely from the wound—which will at times happen—all that is necessary is to pin up the incision for a few hours; or draw the scrotum into a purse, as it were, pulling it well down, and tie a piece of soft string on it, above the incisions, leaving this (ligature?) on for some three hours, but not longer. I feel bound to say, however, that it is very seldom one will find hæmorrhage from the wounds in the scrotum. I have only met with it four times in fifteen years, and in only one case was it anything like serious. The animal was a strong colt, so I threw him over and stitched up the wound, and all was well. No bagging of the scrotum followed, thus proving that the hæmorrhage was not

internal. The stitches were removed in twelve hours, and all came right.

When the hæmorrhage is taking place internally, however, my opinion is that the animal ought to be thrown over immediately, and search made inside to discover, if possible, where the defective point is. It will usually be found quite an easy matter to lay hold of the recently divided inside structures—membranes, *vas deferens*, and even the vascular cord; so that the *exact* origin of the hæmorrhage may at once be seen and effectually dealt with, either by ligature or torsion. I have done it both ways. This is far more professional-like than plugging up the scrotum and superjacent canal with tow or cotton to stop hæmorrhage from —*you don't know what!*

I have, however, used the plug in two different cases, and they both successfully issued from the operation, the plugging material being removed within twenty-four hours. I would never think of doing so now, however, since the end can be accomplished in a far more refined and natural manner.

I shall here take the liberty of quoting a rather remarkable case to show the practicability of my remarks. In the month of May, 1878, I went along with two professional friends on a tour of castrations, so to speak. I operated on five one-year-old colts, belonging to three of my own clients, the first thing in the morning. I then drove a few miles to a farm where there were five castrated by my two friends. Well, the first colt operated on bled severely, and continued doing so till other two were castrated. I then drew their attention to the excessive hæmorrhage, and advised them to throw the colt immediately. This was done; the divided membranes were laid hold of and pulled out, and a small thread of an artery was found jetting away from same. I remarked that it was too small to account for the immense hæmorrhage I had seen; but they thought it was quite enough, and seeing nothing else, they put a ligature on same, and again let up the colt. No improvement, however; hæmorrhage as severe as before. Allowed him to stand for another half hour, and then threw him once more; this time the divided end of vascular cord was, after much difficulty, got hold of, and the secret was out—the cord was wounded about an inch above the *torsioned*

end, and the blood was escaping in a strong jet as thick as a slate pencil! This was at once secured, and the poor colt set at liberty. He came all right, *after being walked home three miles the same night.*

In this case the operation was by torsion; but the operator, after slitting out the testicle, thought the opening in the divided membranes too small, so pulling the testicle well out, he dissected the membranes for a little way down the side of the vascular cord, and in so doing had wounded the latter, and hence the hæmorrhage.

Since adopting my present plan of castration by torsion (this is my third season) I have had no hæmorrhages to deal with, and now scarcely dread any. For twelve years I operated by searing the previously divided end of the vascular cord with the hot iron, and I was sometimes bothered with hæmorrhage; and I believe all castrators by actual cautery have much the same experience, *vide* article by Mr. Fleming in last Journal.

The operation by torsion is extremely simple, successful, now widely adopted, and quite up to the high recommendation given it by Professor Williams in his "Veterinary Surgery." In my humble opinion, however, a good number of castrators by torsion use the knife rather freely, and so lead themselves into uncalled-for hæmorrhage. In operating I merely use the knife to slit out the testicle, then apply the steel clam above the epididymis, and pass the knife through a very small portion of the non-vascular cord, not incising the *vas deferens*, which I grasp in the torsion forceps along with what is known as the vascular cord. It is a great mistake, and the cause of much hæmorrhage, to cut too deeply into the so-called non-vascular part of cord; or, in other words, to go too near the vascular cord with your knife; a very small incision at the extremity of the non-vascular cord is all that is wanted.

In the month of September last I met my friend Mr. Cooper, V.S., Fordyce, at a farm some twelve miles from here, to assist in castrating by torsion a five-year-old horse, a three-year-old, and a two-year-old; and we resolved, on castrating the latter, to make only the one incision, allowing the testicle to pop out, so that in applying the torsion

forceps we grasped the vascular and non-vascular portions of the cord alike, twisted the whole off, and the colt made a grand recovery! Here one would suppose there could have been no hæmorrhage, and there was none! Since then I have operated on one or two very small pony colts after the same fashion, and I believe Mr. Cooper has done so too, and all have done well. Let operators who fear hæmorrhage give this method a trial.

I believe that, as Mr. Fleming says, the *écraseur* is a very safe instrument to castrate with; but I maintain that he who has a good set of torsion tools, steel-toothed clam and forceps, need not care where or what he castrates if he perform in a careful and proper manner. I have used for the last two seasons a set of excellent instruments, clam and forceps, made by Mr. James Anderson, Fife, Keith, and slightly differing from those advertised by him in the VETERINARY JOURNAL, in so far as mine have not the "spring and ratchet," and have simply a screw on each, which I consider preferable and far more secure. I have got the same kind made by Mr. Anderson for three of my professional neighbours, and they all express themselves delighted with the "screw plan."

In conclusion I may, perhaps, be allowed to refer to one cause of hæmorrhage after castration, which I am certain is not generally known, and in cases where it happens, may not even be suspected; and that is the fact that the animals operated on sometimes *bite and pull at the wounds in the scrotum with their teeth!* My friends, Messrs. Gunn and Cooper, both give me details of cases of this kind occurring in their practice; while I have myself met with one most inveterate case of tearing the scrotal incisions with the teeth in a small pony colt. In this case I had to fasten up the wounds three different times, the colt persisting in tearing them open. After the third fastening up and securing of wounds, I took the precaution of also completely securing the little fellow, so that he could turn round to neither side, nor move backwards nor forwards. I left him so for twelve hours, by which time, after so much tearing, etc., the scrotum was so much inflamed and swollen that he desisted from touching it. He made a good recovery.

Editorial.

GLANDERS AND FARCY AMONG HORSES IN THE METROPOLIS.

THERE can now be no doubt that Glanders and Farcy prevail to a serious extent in the metropolis, and that the measures devised to suppress them are so far ineffective as to be almost valueless. The frequency of prosecutions for working Glandered horses, and the deaths reported to occur among people from the loathsome disease, as well as the revelations published with regard to certain West-end mews, reveal a state of affairs which is anything but satisfactory, and to remedy which some other measures must be adopted than those which are now, somewhat perfunctorily it must be confessed, carried out. This is a subject to which we have frequently alluded, and it is one which, we fear, will need further allusion before our views are adopted and the malady brought under control. It is well known to many veterinary surgeons in London that only a very small proportion of the cases of Glanders known to them are reported to the authorities; indeed, it can scarcely be denied that those reported have been only accidentally discovered by the police. From what has recently transpired, it would appear that there is a kind of trade going on in Glandered horses among unscrupulous persons; that diseased horses are worked in cabs and other vehicles, but chiefly by night, when detection is difficult, if not impossible; and that there are knackers in London who are unlicensed, and therefore are tolerably safe from inspection.

The system upon which Glanders is attempted to be suppressed or checked in the metropolis and other cities and towns throughout the country can never be a successful one. The police are incompetent to act as inspectors or to diagnose the presence of the malady, and veterinary surgeons should be specially detailed for this purpose by the police authorities; knackers, so far as we can learn, do not report to the authorities their receiving diseased animals, much less from whom they receive them, and neither do veterinary surgeons give notice of the existence of the malady when they meet with it, or hear of its being present in certain stables.

We are of opinion that a short Act of Parliament is needed to deal with Glanders and Farcy. Granted that the affection (for they are both one) is seldom, if ever, of spontaneous origin, and that it is not only incurable, but that attempts at cure only tend to keep alive and disseminate the contagion, then we feel assured that, to stamp it out, it is absolutely essential that veterinary surgeons should be prohibited from treating it (except under special conditions), and be compelled to report its existence in any animals coming under their observation; that all knackers should be licensed, and be also compelled to report every diseased animal they receive, as well as the source from which they received it; that every person in possession of, or attending on, an animal suspected to be affected with Glanders or Farcy, should either report the same to the authorities or obtain the opinion of a competent veterinary surgeon; and that veterinary surgeons well acquainted with

the various aspects of the disease should be specially appointed as inspectors.

In view of the recent revelations and of the great prevalence of this dangerous and destructive scourge, it becomes imperative that the present measures, which are ineffective, be supplemented or superseded altogether by others drawn on the lines we have indicated. As this requires special legislation, we trust soon to learn that some Member of Parliament will take up the matter, and give us the benefit of improved sanitary control over Glanders and Farcy in the metropolis and elsewhere.

REPORT ON THE EXPERIMENTS AT THE BROWN INSTITUTION ON PLEURO-PNEUMONIA.

(*Continued from page* 417, *vol. VIII.*)

THE other six animals were inoculated early in the present year; but in consequence, first of our being unable to meet with cases of Pleuro-pneumonia in situations convenient for our purpose, and subsequently of the obstacles by legislation, all attempts to test the immunity of these animals in an effectual manner proved unavailing; and I found myself obliged to recommend to the Committee that they should be sold.

The results of the experiments have been so far satisfactory that I cannot help regretting that they have been brought to an abrupt termination. The smallness of the number of the animals which we have had the opportunity of experimenting on renders it impossible to regard them as conclusive. The utmost that can be said is that, so far as they have gone, the results are sufficiently favourable to justify us in recommending further trial of the practice of venous infusion to those who are unlucky enough to have their herds invaded by Pleuro-pneumonia. As regards the safety of the operation itself, I can speak with confidence. Provided that an operator can be found with sufficient dexterity to perform it, and sufficient conscientiousness to avoid the known sources of danger, the trial can be made without risk. Certainty as to its value can only be attained by the experience of some years.

I cannot conclude this report without pointing out that, in case the value of inoculation should be established, there is no reason why the measures of sanitary police which have been enforced by the Legislature should interfere with its useful employment. It has been distinctly recognised as the basis of this legislation that Pleuro-pneumonia is a disease of extremely long incubation—*i.e.*, one which may exist and progress in the organism for months without producing obvious symptoms; and that it is chiefly communicable by actual cohabitation. The recognition of these two facts has been embodied in the principle of *prolonged segregation of all animals that have been exposed to intercourse with living sources of contagion.* If it is found possible to carry out this principle effectually throughout the United Kingdom, it may be confidently anticipated that the prevalence of Pleuro-pneumonia will gradually diminish until, as may be hoped, it may eventually disappear. The realization of this desirable result would, no doubt, tend to diminish the importance of the question of inoculation. So long, however, as outbreaks of Pleuro-pneumonia still exist, the limitation of its areas of prevalence by restrictive regulations would, in my judgment, materially facilitate the application, within the areas so limited, of whatever other means of prevention might be found to be effectual for the diminution of the number of animals attacked.

APPENDICES.

I. Exposure of animals to emanations from diseased organs.
II. Subcutaneous injection of Pleuro-pneumonia exudation-liquid.
III. Inoculation in the tail by the ordinary method.
IV. Fatal case of "blood poisoning" apparently consequent on infusion of Pleuro-pneumonia liquid into the circulating blood.
V. Inoculations by infusion into the veins.
VI. List of animals experimented upon.

APPENDIX I.

Exposure of Animals to the Emanation from diseased organs.

September 9, 1876.—Portions of lung from a cow affected with Pleuro-pneumonia were conveyed direct from a slaughter-house to the Brown Institution, and while still warm were placed in the mangers of two two-year-old bullocks, known as animals Nos. 3 and 4 in this report. The diseased material was allowed to remain in the mangers during the night, and removed in the morning along with a considerable amount of serous fluid which had drained from it. No washing or disinfection was done after its removal. Both these animals were kept under close observation, and no result of this exposure was observed, and no rise of temperature was recorded,

March 27, 1877.—The above experiment was repeated by placing portions of diseased lung in the mangers of a cow, about six years old, and a two-year-old bullock, known as animals Nos. 2 and 5 in this report. In this experiment the portions of lungs were allowed to remain for twenty-four hours, and when removed the mangers were neither washed nor disinfected. It should be noted that in the case of No. 5 he had barely recovered from an attack of Foot-and-mouth disease, communicated by means of saliva obtained from diseased animals at the Metropolitan Cattle Market. Neither of these animals was affected by this contact with the Pleuro-pneumonia virus, and the daily recorded temperature remained normal.

August 16, 1878.—A favourable opportunity presented itself for repeating this experiment on a larger scale, when portions of fresh diseased lungs were placed in the mangers of seven animals, two cows and five yearlings, known as animals Nos. 10 to 15 in this report ; these animals did not suffer from an exposure of twenty-four hours to these diseased organs.

APPENDIX II.

Injection of Pleuro-Pneumonia Exudation-liquid into the Cellular Tissue.

September 6, 1878.—Five yearling heifers which had been kept under daily observation at the Brown Institution since March, and had been the subjects of experiments on Anthrax, were inoculated by the injection of a few drops of the liquid obtained from a portion of diseased lung (taken from a cow slaughtered the same morning) into the subcutaneous cellular tissue on the side of the neck and front of the shoulder.

The punctures could be felt as mere prominences on the following day, and continued so in all the animals for four days. On the fifth day, in one there was some swelling and tenderness at the seat of puncture, and on the following day a similar appearance was observed in another. The daily record kept will best show the progress and the result of this swelling.

Sept. 11, 1878.—At the seat of puncture in No. 14, there is a little doughy painful swelling.

Sept. 12.—Swelling increasing in No. 14, and just beginning in No. 10.

Sept. 13.—Swelling still increasing in Nos. 10 and 14, temperature normal in all, and no evidence of constitutional disturbance in the two that show local symptoms.

Sept. 14.—Indications of slight swelling in Nos. 11, 12, and 13 ; in Nos.

10 and 14 the swelling is spreading, the temperature of No. 14 is 102·9, in the others still normal.

Sept. 15.—Increase of swelling in all, but most marked in No. 14.

Sept. 15—No. 10. 102·6.
„ 11. 102·4.
„ 12. 102·8.
„ 13. 102·4.
„ 14. 103·4.

Sept. 16.—No. 10. 102·2.
„ 11. 102·6.
„ 12. 102·8.
„ 13. 102·2.
„ 14. 104·2.

Sept. 16.—The swelling in the case of No. 14 increasing rapidly, very tender, doughy, and pits on pressure.

Sept. 17.—No. 10. 103·2. Swelling extends along one side of neck.
„ No. 11. 102·9. Swelling about the size of an egg.
„ No. 12. 103·6. Swelling about 6 inches in diameter.
„ No. 13. 102·6. Swelling as large as an egg.
„ No. 14. 105·4. The swelling now extends along both sides of the neck, animal ill, and refuses food.

Sept. 18.—No. 10. 104·2. The swelling is still confined to one side of neck.
„ No. 11. 101·9.
„ No. 12. 103·9. Swelling still spreading.
„ No. 13. 102·0.
„ No. 14. 106·0 At the seat of inoculation the skin is soft and moist, but there is no softening of the swelling generally.

Sept. 19.—No. 10. 104·3. The swelling is now extending along on both sides of the neck.
„ No. 11. 102·2.
„ No. 12. 104·0. The infiltration of the cellular tissue still progressing.
„ No. 13. 101·9. Swelling not increasing.
„ No. 14. 106·4. Constitutional disturbance great, the œdematous swelling now extends from the head along the whole under surface of the neck to the sternum.

Sept. 20.—No. 10. 105·0. The infiltration spreading rapidly.
„ No. 11. 102·0. The progress of the œdema now seems arrested.
„ No. 12. 104·0. The swelling involves nearly the whole of one side of the neck.
„ No. 13. 102·0. Swelling does not increase.
„ No. 14. 106·4. Animal getting weak, losing flesh rapidly ; the swelling spreading down both forelegs, but more particularly the left, the inoculation having been performed on that side. When some incisions were made into the swollen cellular tissue a quantity of serous fluid drained away. On cooling, this liquid became of a gelatinous consistence, and a soft clot separated. Under the microscope few red blood globules and great numbers of large granular cells were seen, but no bacteria or allied organisms could be made out.

Sept. 21.—No. 10. 105·8. The swelling is still advancing, and the animal refuses food, and is losing condition. A few incisions made to relieve the tension if possible.
„ No. 11. 102·0.
„ No. 12. 104·0. Swelling very tender.
„ No. 13. 102·0.
„ No. 14. 105·6. Very weak, lies almost constantly, the incisions discharging freely, but the swelling spreading under chest and along the belly, skin sloughing where it was scarified.

Sept. 22.—No 10. 105·8. The infiltration of the cellular tissue extending down the fore-legs as well as along the whole under surface of neck.

Sept. 22.—No. 11. 102·2. Swelling subsiding.
„ No. 12. 104·5. The swelling still confined to the side of the neck on which the puncture was made. A few small punctures made in the skin with a lancet.
„ No. 13. 102·6.
„ No. 14. 103·0. Can scarcely stand, sloughing condition of the skin, with fœtid discharge.
Sept. 23.—No. 10. 106·4. Very weak, and the incisions in the skin assuming an unhealthy appearance.
„ No. 11. 102·0. Swelling subsiding.
„ No. 12. 103·8. Swelling less tense, but wounds unhealthy.
„ No. 13. 101·8. Swelling subsiding.
„ No. 14. 100·2. Died in the course of the day. *Post mortem* same night. A large quantity of straw-coloured gelatinous exudation in the subcutaneous cellular tissue, extending from the lower jaw along the inferior aspect of the neck, chest, and abdomen, and also extending down both fore-legs below the knee. In some places the exudation was nearly an inch in thickness, and when cut it yielded a pale straw-coloured juice. There was a small quantity of exudation in the peritoneal cavity, but the abdominal viscera were otherwise healthy. On the pleura and pericardium there were some hæmorrhagic spots as well as on the surface of the lungs, which were otherwise healthy.
Sept. 24.—No. 10. 106·4. Wounds sloughing and weakness progressing.
„ No. 11. 101·8.
„ No. 12. 104·0. The swelling now subsiding.
„ No. 13. 102·0.
Sept. 25.—No. 10. 105·8. The swelling extending along the belly, animal sinking.
„ No. 11. 101·8. Very little swelling now remains.
„ No. 12. 103·0. Swelling subsiding, fluid still draining freely from the wounds, which are of a very unhealthy character.
„ No. 13. 101·8. The swelling has almost disappeared.
Sept. 26.—No. 10. 104·0. Lies constantly, can scarcely get up, evidently sinking.
„ No. 11. 101·8.
„ No. 12. 103·2. Swelling much reduced, a fœtid discharge continues from the wounds.
Sept. 27.—No. 10. 102·3. Unable to stand; slaughtered; *post mortem* immediately. With the exception of a few hæmorrhagic spots on the peritoneum, the abdominal viscera were healthy. Pleura studded with hæmorrhagic spots, and contained a small quantity of exudation. Lungs perfectlp healthy.

In this case the swelling extended from the lower jaw along the under surface of the neck and body to the mammary gland, and down both fore-legs as far as the fetlock joints.

Sept. 28.—No. 12. 102·0. Swelling fast disappearing.
Sept. 30.—No. 12. 101·8. Wounds healing, and swelling almost gone.

Appendix III.

Inoculation in the Tail by the ordinary method.

A healthy cow, about six years old, which had been kept under daily observation for several months, and had on three occasions during the month of June, 1876, resisted infection with Foot-and-mouth disease, calved on August 15, 1876, and for a few days both before and after calving an increase in the bodily temperature was noted. As determined by a long series of

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observations, the mean normal temperature was 101·6 Fahr., the range of readings being from 101 to 102·2.

Nov. 3, 1876.—About two drops of the fluid which had drained from a diseased lung were injected into the cellular tissue of the tail about 3 inches above its termination. For the first four days the seat of the puncture could be felt as a very small prominence, but on the fifth day it was tender and slightly swollen. The swelling slowly increased up to the 10th day, and was at that date confined to the seat of puncture, and about 1½ inch in diameter.

On the 12th day a slough had formed in the centre of this swelling, which separated on the 17th day, and left an ill-conditioned sore.

A much more extensive secondary swelling now began, involving the whole circumference of the lower part of the tail, and spread gradually upward for 9 inches above the seat of the inoculation by the 33rd day. At this time about 12 inches of the lower part of the tail was twice its natural thickness. This swelling was firm, cold, and painless, except at its upper margin, where it terminated somewhat abruptly in a narrow band, where the skin was hot and tender, and, at which point by the thirty-eighth day, softening began, and the future line of separation was marked out. The dead portion of the tail gradually shrivelled, and finally separated without hæmorrhage on January 3, 1877, the 58th day after inoculation. Under ordinary circumstances the dead portion of the tail would have been amputated long before, but in this case the sequel to the inoculation was watched without interference.

While these changes were taking place at the seat of inoculation the animal showed no signs of constitutional disturbance; the mean temperature during the 58 days was 101·64, and the daily readings ranged from 101·2 to 102·2. No suppuration attended this sloughing, and the small raw surface on the end of the stump healed in a few days.

This animal was afterwards placed in a cow-shed where Pleuro-pneumonia existed on November 23, 1877, and kept there until January 9, 1878, when, being so ill that there was little prospect of recovery, she was slaughtered. A post-mortem examination showed that the illness of this animal was due to the presence of a large surgical needle which had been swallowed with the food, and having transfixed the wall of the second stomach had injured the liver and diaphragm, causing a large diaphragmatic abscess; in addition, the liver was extensively diseased and contained a large number of parasites. The lungs and pleura were perfectly healthy. No trace of any adhesions or sub-pleural exudation.

Appendix IV.

Fatal case of "Blood-poisoning," apparently consequent upon the injection into the circulating blood of Pleuro-pneumonia Virus.

A cow supposed to be about thirteen years old had been kept under daily observation at the Brown Institution for eight months. In June, 1876, she resisted infection with Foot-and-mouth disease on four occasions. With the exception of a cough (which was mostly heard in the morning or when disturbed after she had been lying for some time), she appeared in good health. The mean normal temperature obtained by daily observations extending over several months was 100·8° Fahr., the range of the readings being from 100·1 to 101·7.

About the middle of November for several days the temperature rose without any apparent cause, and again declined to the normal; no other change in the animal's condition was noted. During the first 12 days of November the highest recorded temperature, that on the 12th, was 102·2, and the lowest, on the 10th, 101·2.

The daily record was as follows:—

Nov. 12.—102·2	*Nov.* 15.—103·8
„ 13.—103·4	„ 16.—102·4
„ 14.—104·0	„ 17.—102·0

The temperature continued normal during the remainder of this month and the early part of December.

Dec. 12, 1876.—Three fluid drachms of the exudation-liquid from Pleuro-pneumonia lung were injected into the posterior auricular vein.

Little local effect was produced for the first 15 days; the animal showed no constitutional disturbance, the temperature being 101·73° Fahr., and th highest 102° Fahr.

Dec. 28.—The 16th day the temperature rose to 103·2, but no other symptom was observed; the pulse and respiration remained normal, and the cow fed and ruminated as usual.

Dec. 29.—Still feeding and ruminating, but appears ill, breathing difficult and irregular, 30 per minute, pulse 60, temperature 105·6. Stands with head elevated and nose protruded, evinces no signs of pain when the intercostal spaces are pressed.

Dec. 30.—Dull and prostrate, not feeding, constipation with mucus coating of fæces; respirations 32, pulse 70, temperature 105·4. When moved she grunts, and shows some indication of pain when the intercostal spaces are pressed. Auscultation does not reveal any lung consolidation.

Dec. 31.—In the same prostrate condition as yesterday, neither feeding nor ruminating, respirations 30, pulse 68, temperature 105·2.

January 1, 1877.—Prostration increasing, losing condition rapidly, respiration 32, pulse 64, temperature 105·6.

Jan. 2.—Respirations 36, pulse 70, weak, and temperature 105·6.

Jan. 3, 9 A.M.—Respiration 60, and accompanied by a grunt, which proved, on examination, to be due to the closure of the glottis after each inspiration, the pulse was indistinct in the superficial vessels; temperature 104·8. At 3 P.M. on the same day the temperature had fallen to 104, and by 9 P.M. to 102·8—2° in the twelve hours.

Jan. 4.—Lying and unable to get up, breathing heavily, grunting, shivering, and grating her teeth; respirations 82, pulse imperceptible, temperature 101·6 in the morning, and only 100·4 at 10 P.M., when the animal was evidently sinking.

Jan. 5.—Died about 7 A.M. Post-mortem 8 hours after death. With the exception of a small blood-clot under the capsule of the liver, the whole of the abdominal viscera were healthy; this small clot was recent, and probably due to a slight rupture in some of the animal's struggles to get up.

The costal pleura on both sides showed numerous patches of recent exudation, the vicinity of which was studded with small hæmorrhagic spots, the surfaces of both lungs were smooth, and free from any adhesions to the sides of the chest, and from sub-pleural exudation, although on the surface of both there were some hæmorrhagic patches. The right lung, from the animal having died on that side, was dark-coloured and full of blood, but its tissue was healthy and crepitant throughout. Along the thin margin of the middle part of the left lung there existed a patch of partially consolidated tissue, about three or four inches in extent. The firm straw-coloured exudation, which was confined to the interlobular tissue, not invading the lobules themselves, varied in thickness from $\frac{1}{16}$ to $\frac{1}{8}$ inch. When cut, no juice exuded from the surface, such as is always seen in cases of acute contagious Pleuro-pneumonia.

The whole appearances showed conclusively that this exudation was not the result of any recent inflammatory action, but some old morbid process in the interlobular tissue.

In addition, about the middle of the superior aspect of the left lung,

there existed a cavity bounded by a strong resisting membrane containing a mass of dead lung, the remains of the interlobular tissue being easily made out under the microscope. This piece of necrosed lung was as large as an egg, and was infiltrated and partially surrounded by cheesy material.

Such cavities, containing portions of dead-lung tissue, have frequently been met with in the lungs of cattle which have recovered from limited or partial attacks of Pleuro-pneumonia.

Professor Brown, in the Annual Report of the Veterinary Department of the Privy Council for 1876, at pp. 18, 19, describes a case of this kind where the animal was slaughtered eleven months after recovery.

The French Commission, in reporting the results of their experiments in 1854, stated that in six out of eleven uninoculated animals that had been exposed to the influence of contagion by three months' cohabitation with diseased animals without apparent result, they found portions of dead lung encysted. This would go far to show that these six animals had been the subjects of limited attacks of the disease.

APPENDIX V.

Inoculation by the infusion of Pleuro-pneumonia Virus into the Blood.

In performing inoculation by this method, the vein running down the back of the ear was selected on account of its moderate size and superficial position.

The vein was exposed by a small incision in the skin, and the sharp-pointed steel cannula of a subcutaneous syringe introduced into the vein, and the fluid obtained from the diseased lung slowly passed into the blood-stream by the syringe. The vein was afterwards secured by a ligature, and the small wound in the skin closed by a suture. In the first attempts at inoculation by this method, it was found that the ligature of the vein and the suture in the skin caused some swelling, which did not subside in less than fourteen days. It was also seen that by making an incision in the skin, the risk of introducing the virus into the cellular tissue, which has since been proved to be extremely dangerous, was very much increased. It was afterwards found that, with the exception of one case in which the vein was very small, in a calf about two months old, the incision in the skin could be dispensed with. By shaving the hair off the spot selected for the operation, and applying pressure so as to cause the distention of the vein by blood, it could be distinctly seen, and a fine-pointed steel cannula passed into it in the direction of the blood-stream. That the cannula was in the vein itself, and not merely lodged in the sheath or surrounding cellular tissue, was readily demonstrated by allowing a few drops of blood to flow before attempting to inject the virus. By this means the risk of inoculating the cellular tissue was reduced to a minimum if not entirely avoided. The application of slight pressure over the vein for a few seconds after the withdrawal of the cannula was found sufficient to stop any slight bleeding from the puncture, and thus the trouble and danger of applying a ligature to the vein was found unnecessary.

Sept. 9, 1876.—The animals, known in this Report as Nos. 5, 6, 7, and 8 (see Appendix VI.), had been under daily observation at the Brown Institution for three months, and during the whole of that time had remained perfectly healthy, as is shown by the following temperatures :—

	Highest.		Lowest.		Mean.
No. 5.—	102·6	...	101·45	...	101·65
„ 6.—	102·6	...	100·4	...	101·55
„ 7.—	102·8	...	101·1	...	101·95
„ 8.—	102·6	...	101·2	...	101·9

The inoculation was performed by injecting two fluid drachms of fresh Pleuro-pneumonia exudation into the vein. The only local effect observed was a little swelling of the wound, which disappeared, leaving only the cicatrix of the incision by the fourteenth day.

No constitutional disturbance followed this injection of the virus into the blood; the daily temperature of all the animals continued normal, as is shown by the following Table, the results of forty daily observations of each animal:—

	Highest.		Lowest.		Mean.
No. 5.—	102·6	...	101·4	...	101·65
„ 6.—	102·2	...	101·3	...	101·71
„ 7.—	102·9	...	100·7	...	101·8
„ 8.—	102·4	...	101·0	...	101·7

Nov. 3, 1876.—Some of the fluid collected for the inoculation of No. 2 in the cellular tissue of the tail was used for infusion into the vein in animals Nos. 3, 4 and 9 (See Appendix VI.). The animals Nos. 3 and 4 had been exposed to contact with portions of diseased lung on September 9, but the daily temperature recorded, commencing in June, shows that they had been healthy during the whole time:—

	Highest.		Lowest.		Mean.
No. 3.—	101·9	...	101·1	...	101·29
„ 4.—	102·0	...	100·0	...	101·15

In the case of No. 9, the animal was barely three months old, and the normal temperature, as the mean of twenty daily observations, was found to be 102·2.

The local effect produced by the injection into the vein was only slight in Nos. 3 and 4, and the wounds had closed and all swelling disappeared in from twelve to sixteen days. In the case of No. 9 the vein was so small that even when fully exposed some difficulty was found in introducing the cannula. Although no infiltration of the surrounding cellular tissue resulted from the injury inflicted, an abscess about the size of a pigeon's egg formed, and the wound was not closed until the twenty-third day after the inoculation, but no secondary swelling appeared, and no general disturbance was observed in any of these animals, even although the quantity of fluid injected was three fluid drachms. As proof of this, the result of the daily temperature observations during the forty days immediately succeeding the operation may be quoted:—

	Highest.		Lowest.		Avera.e.
No. 3.—	102·4	...	101·2	...	101·7
„ 4.—	102·0	...	101·2	...	101·6
„ 9.—	102·8	...	101·9	...	102·21

Dec. 12, 1876.—A portion of the material used for the inoculation of the cow No. 1, referred to in Appendix IV., was used for the second inoculation of Nos. 3, 4, 5 and 6. The operation was this time performed without making an incision in the skin. The local effect produced by the puncture was only a very slight prominence, which could be felt for a few days.

The quantity of fluid injected was again three drachms.

No constitutional effects were visible as the result of this inoculation, although the animals were under observation for some months, as will be seen by reference to Appendix VI.

They were afterwards submitted to contact with diseased animals, and were kept in infected places, to test, as far as practicable, the protective value of the inoculation. The animals Nos. 3 and 4 were slaughtered March 1st, 1878, after a test exposure in an infected shed in November and December,

1877. A post-mortem examination was made, and the lungs of both were found in every respect healthy. Animal No. 5 was infected with Foot-and-mouth disease in March, 1877, and was placed in a shed infected with Pleuro-pneumonia in November, 1877, and continued healthy up to the end of March, 1878, when he was disposed of. No. 6 was placed among infected stock, July, 1877 ; was brought back to the Brown Institution in February, 1878, when he was made the subject of a test experiment relating to the communication of Anthrax by feeding.

March 27, 1877.—Animals Nos. 7, 8 and 9 were a second time inoculated by injecting into the veins three drachms of Pleuro-pneumonia virus.

Since their previous inoculation on September 9, 1876, Nos. 7 and 8 had been castrated in November, the result of which operation was to cause an increase of temperature for a few days. They had also been affected with Foot-and-mouth disease in February, 1877, induced by eating hay moistened with the saliva of diseased animals.

As the result of this Pleuro-pneumonia inoculation, no general effect was produced ; they were all kept at the Brown Institution till July, and then placed along with No. 6 among diseased stock, and brought back to the Brown Institution, for experiments on the production of Anthrax in February, 1878. Nos. 7 and 8 were afterwards sold at the end of March, but No. 9, for which another animal was obtained in exchange, remained at the Brown Institution in a healthy condition till the middle of May.

September 2, 1878.—The five yearlings referred to in Appendix II. were inoculated by the injection of two drachms of Pleuro-pneumonia virus into the vein. At the seat of puncture a mere prominence could be felt, which had quite subsided by the 6th, when the subcutaneous injection was performed. These animals had been the subjects of Anthrax experiments in May and June, but their temperatures had remained normal from the middle of July, and continued so until after the subcutaneous inoculation on September 6. As no opportunity was found for placing these animals in infected sheds, they were finally sold in a healthy condition in November.

September 6, 1878.—Two cows, which had been under almost daily observation at the Brown Institution during May, June, and July, while the subject of vaccination observations, not connected with the work of the Royal Agricultural Society, were purchased for Pleuro-pneumonia experiments. Some of the Pleuro-pneumonia virus used for the subcutaneous inoculation of the five yearlings, Nos. 10 to 14, was injected into the vein of these two cows. No result was observed further than a mere prominence at the seat of puncture, which could be felt for a few days.

As these could not be placed in infected places, they were disposed of as healthy in the beginning of November.

THE VITAL RESISTANCE OF THE PORK-MEASLE (*CYSTICERCUS CELLULOSUS*) AND SOME OTHER ENTOZOA.

In the *Zeitschrift für Praktische Veterinær, Wissenschaft.* Professor Perroncito gives an interesting account of some experiments he had made in order to ascertain the vital resistance of the Pig-Measle and some other entozoa of that class ; experiments which are important from a sanitary point of view. As the result of his investigations, we may give the following *résumé* :—

1. A careful study ofthe movements of the *Cysticercus* and other helminths, the ascertaining of their more or less rapid imbibition of various staining fluids, and the experiments made with a view to discover the conditions under which the development of these parasites takes place, afford certain indications which enable one to distinguish living from dead *Cysticerci.*

2. The warm table of Schulze gives the best means for determining the temperature at which these minute entozoa—no matter what form they present—succumb. By this apparatus the temperature can be gradually raised until death occurs.

3. The movements of the Cysticerci and other larval forms of entozoa are of the highest importance, when it is a question of deciding as to whether they are alive or dead.

4. Dead *Tæniæ* and *Cysticerci* are rapidly and strongly impregnated by neutral tints, the dead tissues of many species of entozoa being also more readily impregnated than living tissue.

5. The attempts at growing or cultivating entozoa only confirm the importance of recognising the existence or non-existence of movements when it is required to distinguish whether an entozoon is dead or alive.

The practical conclusions Perroncito arrives at from his inquiries are the following :—

1. The *Cysticercus cellulosus* (Pig-Measle) rarely succumbs to a temperature of 45° cent., more frequently 47°, ordinarily 48°, sometimes 49° only, and exceptionally it resists as much as 50°. It assuredly perishes if exposed to the latter temperature for a minute.

2. The *Cysticercus pisiformis* of the rabbit, like the Cysticercus cellulosus, loses its contractility and dies sometimes at 45° or 46°, but usually it resists to 47° or 48°.

3. A *Cysticercus tenuicollis* succumbed at 49°.

4. The scolices of the *Cœnurus cerebralis* of the sheep die at 42°.

5. The scolices of the echinococcic bladders usually succumb at 47° or 48°, and never in any case resist a temperature of 50°.

6. The *Tænia cucumerina* died in one instance at 43°, and in another at 45°.

7. The *Tænia serrata* of the dog succumbed at 50°.

8. Of two *Tæniæ perfoliata* (horse) one died at 45° the other at 50°.

9. The movements of the embryos of *Filaria microstoma* ceased at 45°, and the entozoa were dead at 48°.

10. Perfect individuals as well as the embryos of *Filaria megastoma* (from the horse's stomach) perished at 47°.

11. The embryos of *Strongylus filaria* usually became motionless at 47° or 48° ; they rarely resisted 49°, and in one instance only was 50° reached. Death was instantaneous at the latter temperature.

12. The *Oxyuris vivaporous*, the infusoria of the colon and cæcum of the horse, and psorosperms of the rabbit's liver, never exhibited movements under the influence of the different modifications of temperature to which they were submitted.

A LARGE BLOOD-CLOT GIVING RISE TO SYMPTOMS OF CARDIAC EMBOLISM.

THOUGH this case appeared in the *Revue Vétérinaire* some time ago, yet we offer no apology for bringing it under the notice of our readers now, because of its interest and importance. The case is related by M. Larrony, veterinary surgeon to the stallion depôt at Pau, and the subject of it was a half-bred English horse, seven years old, which had never before suffered from disease. Being reported unwell it was examined by Larrony, who found indications of ordinary Pneumonia, the affection being limited to the lower portion of the right lung. By resorting to blood-letting, sinapisms, and the administration of tartar emetic, etc., the more acute symptoms appeared to be subdued. Two days afterwards, however, the patient was worse, and

towards ten o'clock at night, he fell suddenly as if shot. At intervals there was hæmorrhage from the nostrils and mouth. The same medical treatment was persevered in, and the bloodletting was repeated, a larger quantity being abstracted than before.

Next day the horse appeared lively, had a good appetite, the respiration was less hurried than on the previous evening, and the respiratory murmur was less confused in the diseased lung. While Larrony was present the animal again suddenly fell, and the symptoms observed were "truly extraordinary," and such as Larrony had never witnessed before.

There was a kind of violent tetanic attack, during which the respiration was suspended. The limbs became rigid, the head thrown back on the neck, and the tail raised over the croup; the abdominal muscles were in a state of extreme contraction, and the *Membrana nictitans* covered the entire globe of the eye. This state lasted for about forty seconds. Then a change ensued. The tetanic contractions diminished; soon the limbs became flexed, and were moved convulsively; the respiration resumed its normal character, then became hurried, tumultuous and dyspnœic; the *facies* denoted extreme anxiety; the horse threw himself on his sternum and coughed—the cough being deep, difficult, and stridulous, then moist, and succeeded immediately by another fit of hæmorrhage from the mouth and nostrils, the blood being spumous and arterial-tinted. Finally, and very quickly, the body was covered with an abundant perspiration; the horse arose, but its strength seemed to be gone—the dyspnœa subsided until there was only a persistent acceleration of the flank movements, coinciding with an aggravation of the Pneumonia.

Larrony, attributing these attacks, each with its tetanic and hæmorrhagic phases, to some sudden obstruction in the pulmonary or cardiac circulation, was of opinion that they were due to embolism, and prognosticated a fatal termination in a short time.

During the six succeeding days, the horse had four more attacks at irregular intervals, but each exactly like the previous ones. The Pneumonia and debility advanced progressively; the pulse became irregular and intermittent after every third pulsation; emaciation set in rapidly; a seventh attack of the alarming condition before mentioned was succeeded by Hemiplegia of the left side of the body; and, finally, during the night of April 6-7—fifteen days after the first symptoms became manifest—the horse fell, never to rise again.

At the autopsy, made twelve hours after death, the characteristic alterations of pulmonary lobular hepatisation were found. But it was in the heart and large vessels that those lesions were discovered, which could alone furnish an explanation of the very unusual symptoms manifested by the horse in the course of the disease. There were the signs of Endocarditis in the two ventricles; in the left side of the heart was a fibrinous clot, situated beneath the mitral valve and pushing it upward, itself being prolonged into the aorta to an extent of about eight inches, and also into the left coronary artery. This enormous clot almost completely obstructed the auriculo-ventriculo opening; at the inferior extremity it was thick, a little flattened, but bi-convex on its two surfaces. The mitral and sigmoid valves had alone left their imprint on the clot. The superior or arterial prolongation of this clot was less obstructive, and had gradually diminished in size as it followed the blood current. A single division occupied the left coronary artery; five or six more or less tapering prolongations of variable length, but all pretty nearly the size of a goose quill, entered the aorta. Throughout its dimensions, the clot was yellow and resisting; but its density and resistance diminished as it became prolonged.

The presence of the clot in the left side of the heart, according to Larrony, explained the cerebral anæmia, as well as the occurrence of

Hemiplegia, which was observed before the horse died. The blood, in fact, was supplied to the brain in insufficient quantity, and this diminished supply also explained the weakened vital functions which formed so conspicuous a feature in the case.

In the right side of the heart were clots of recent formation, and extending into the pulmonary arteries. At the bifurcation of these vessels to a small extent the internal tunic was roughened, nodulated, and grated under the bistoury.

There was a small quantity of sero-sanguineous effusion at the base of the brain.

EPIZOÖTY AMONG CATS, CAUSED BY WORMS.

In the *Giornale di Medicina Veterinaria Practica* for August, 1877, Dr. Romano, of Gemona (Friuli), relates the outbreak of an epizoöty among cats, due to *Tænia crassicollis*. It appears he was informed by his friend Dr. Leoncini, practising at Osoppo, that during fifteen days the majority of the cats in a hamlet of that commune had perished from some inappreciable cause, after presenting the following symptoms: gradual diminution, then complete loss of appetite, abdomen retracted, slight diarrhœa followed by constipation, profuse salivation, contraction of the elevator muscles of the upper lip in some instances; great prostration of strength, and loss of sight. Some of the sick creatures lost their hearing, or at any rate did not respond to the call of those whom they used to recognise. Some among them vomited, and appeared to be relieved by the act, as their appetite returned; but soon they succumbed like the others. Nervous phenomena, epileptiform convulsions, and more frequently symptoms of Colic were likewise remarked.

When Dr. Romano arrived in the locality, he could not procure any bodies of diseased cats, as the children had thrown them into the river Tagliamento which runs below the fortress of Osoppo, and he had to wait for some days before he had an opportunity of making a *post-mortem* examination of the carcase of a cat which had just died. In this he found the principal lesions located in the stomach. The walls of that viscus were contracted, and the mucous membrane was the seat of a catarrhal inflammation, in the products of which was found a long, white, flat worm, which was carefully kept for study. The stomach, as well as the intestines, contained no traces of food; the latter were equally destitute of fæcal matters, and offered all the appearances of chronic inflammation. The other organs were healthy.

An examination of the worm was made with the assistance of Drs. Leoncini and Fachini. The helminth had the body divided into segments, and measured twelve centimetres in length, and five or six millimetres in breadth; it had all the characters of a tapeworm, and a microscopical examination of its head confirmed this.

Some days afterwards Romano made an autopsy on two other cats. In one of them he found the alterations described above, and discovered a smaller tapeworm than the other. The second cat also offered the same lesions, but no worm could be discovered; and this circumstance baffled Romano, until several people of the locality assured him that they had seen their cats, in the course of the disease, and after violent and repeated efforts, vomit a kind of white cord like the tapeworm the doctor showed them. Re-assured and confirmed in his diagnosis by this information, he then proceeded to ascertain the name of the worm, and found that it was the *Tænia crassicollis*, which proceeds from the *Cysticercus fasciolaris* found in the liver of rats. He was informed that, during the summer, the houses in Osoppo had been ravaged by swarms of rats from the fortress. These had been greatly suppressed by cats, and it was the best rat-killers which died. There was here a relation between cause and effect which could not be denied.

Proceedings of Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

REPORT OF PROCEEDINGS AT THE QUARTERLY AND SPECIAL MEETINGS, HELD ON THE 1ST OF JULY, 1879.

Present :—The President (Professor Williams), General Sir F. Fitzwygram, Bart., Professor McCall, Professor Pritchard, Mr. Anderton, Mr. Batt, Mr. Blakeway, Mr. Cartwright, Mr. Collins, Mr. Cuthbert, Mr. Freeman, Mr. Gowing, Mr. Greaves, Mr. Harpley, Mr. Morgan, Mr. Reynolds, Mr. Robertson, Mr. Taylor, Mr. Whittle, Mr. G. Williams, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

Correspondence.

Letters were received from Professor Simonds, Professor McCall, Professor Walley, Messrs. H. J. Cartwright, George Williams, and Mr. James Moon, acknowledging their re-election as Vice-Presidents.

A letter was received from Mr. Menzies, of the Highland and Agricultural Society, acknowledging the receipt of six copies of the Supplemental Charter; from Mr. E. B. Nicholson, of the London Institution, Finsbury Circus, in which he desired to present to the Library of the College a copy of his work on "The Rights of an Animal."

On the motion of Mr. Cartwright, seconded by Mr. P. Taylor, a vote of thanks was awarded to Mr. Nicholson for his presentation.

A letter was also received from Mr. Dray, declining the honour of his re-election as Vice-President and Treasurer, which step he had, he said, taken after mature deliberation.

The SECRETARY remarked that Mr. Dray had been for a great number of years a very useful member of the Council, and it would now be necessary in consequence of his resolution, to elect both a Vice-President and Treasurer.

Reports of Examiners.

At the meetings of the Scotch Section of the Court of Examiners, held in Edinburgh and Glasgow on April 16th and 17th, three students from the Edinburgh Veterinary College passed; and sixteen students from the New Veterinary College passed and obtained their diplomas.

Also at another meeting, held in Glasgow on April 17th, seven passed and two were rejected.

At the meetings of the Scotch Section of the Court of Examiners, held in Edinburgh on the 14th April, for "the first examination," from Edinburgh Veterinary College seven passed and two were rejected, and from the New Veterinary College, Edinburgh, ten passed and one was rejected. From the Glasgow Veterinary College two students passed.

At the meetings of the Scotch Section of the Court of Examiners, held on April 18th, for "the second examination," from the Edinburgh Veterinary College six passed and seven were rejected; and at a meeting on the same day, the same examiners being present, from the New Veterinary College three passed and two were rejected; also for "the second examination," sixteen passed and two were rejected.

At the meetings of the Court of Examiners, held at Glasgow on April 21st and 22nd, for "the second examination," from the Glasgow Veterinary College seventeen passed and ten were rejected.

Mr. HARPLEY, alluding to Mr. Dray's letter of resignation, expressed himself as extremely sorry that such an old and faithful servant of the

institution had sent in his resignation, and he thought it was the duty of all the members of the Council to try and induce Mr. Dray to reconsider his decision. He would move a resolution to that effect.

Mr. GOWING thought that there must have been some private reason or some offence taken on the part of Mr. Dray before he had come to such a conclusion, and he was of opinion that, until the real cause of the resignation was known, Mr. Dray should not be further solicited in the matter. He felt disposed to elect another Treasurer, and would propose in the room of Mr. Dray, General Sir F. Fitzwygram.

General Sir FREDERICK FITZWYGRAM said he had great pleasure in seconding Mr. Harpley's motion. He thought it would not only be a courteous act, but almost a duty on the part of the Council to ask Mr. Dray to consider his refusal. Mr. Dray was not only an old member of the profession, but he was one who had stood very high in the profession as an honourable man (applause), and had fulfilled his duties well and faithfully. In addition to these considerations, Mr. Dray resided in London, which was a most important consideration. Mr. Dray was one of the most useful members of the Council, and he had great pleasure in seconding the motion that that gentleman would re-consider his decision.

Mr. GOWING said he still adhered to his views in the matter.

Mr. MORGAN thought that Mr. Dray ought not to be pressed to re-consider his decision, and proposed as an amendment, that Mr. Dray's resignation be accepted.

Mr. GOWING seconded the motion.

Mr. GREAVES thought it would have been more satisfactory to the Council if Mr. Dray had given his reasons for resigning. He also thought that if the system were commenced of requesting gentlemen to withdraw their resignations, it might be continued *ad infinitum*. It had only been in rare instances that the Council had resorted to such a course. He presumed that Mr. Dray had resigned after due deliberation, and he (Mr. Greaves) was not one of those who would go hat in hand and ask Mr. Dray to re-consider his decision. He felt disposed to vote against Mr. Harpley's motion.

In the result, six members voted for the amendment and ten for the motion, the motion was therefore declared carried.

The SECRETARY read a letter addressed to Dr. Dunsmure by a student who had not presented himself for examination, and also another letter, of similar import, addressed to himself, in which the applicant asked for a return of the fee he had paid.

After some conversation, it was resolved that the Secretary be instructed to write to the effect that the applicant could again come up for examination, but that the fee could not be returned.

The SECRETARY read the following letter from Professor McCall, relative to Mr. Crozier's case :—

"W. H. Coates, Secretary, R.C.V.S., London.

"Veterinary College, Buccleuch Street, Glasgow, April 30, 1879.

"DEAR SIR,—Mr. James Crozier, a student of this college, enrolled under the 'old rules,' and rejected the second time at the 'final examination,' held here on the 17th inst., is anxious to attend another winter session, and come up again for examination in April, 1880. Apparently, the examinations for the diploma, under the old system, cease in July of this year ; but in view of Mr. Crozier's intentions being carried out, will the Council of the R.C.V.S. grant him the privilege of presenting himself again and for the third time before the examiners in April, 1880? I am, etc.,

"JAMES MCCALL."

The SECRETARY said he believed it was agreed that the examinations

should extend to Christmas ; and therefore it would be in January, 1880, when the examinations would cease, but not in April.

Professor McCALL said there might not be a body of examiners competent to deal with Mr. Crozier in January, and it would therefore be a great advantage to him if he were allowed to come up in April.

Gen. Sir FREDK. FITZWYGRAM said it was well known to the Council that the trouble and expense of a duplicate system of examination was very great. With the assent of the three schools the time of the examination was limited to January, 1880, and that was considered sufficient to cover every grievance. If the present application were acceded to there might be no end of similar applications ; and he thought it advisable to stick to the rules.

The matter was then allowed to drop.

Appointment of Committees.

The following are the members appointed for the several committees for the ensuing year :—

Finance Committee : Messrs. Cartwright, Greaves, Harpley, Moon, Morgan, and Taylor.

Publication Committee : Professor Brown, and Messrs. Batt and Fleming.

House Committee : Messrs. Batt, Harpley, Professor Pritchard, and G. Williams.

College Fund Committee : Professor Brown, and Messrs. Gowing, Harpley, and Whittle.

Parliamentary Committee : Professors Simonds, Brown, and Pritchard, and Mr. Cuthbert, Gen. Sir Fredk. Fitzwygram, Mr. Greaves, Mr. Reynolds, and Mr. Taylor, with power to add to their number.

Library Committee : Professor Axe, and Messrs. Blakeway and Harpley.

Examiners for the Fellowship Degree.

Mr. GOWING proposed that the Board be re-appointed, but Mr. Harpley and Professor Williams declined, upon the grounds that they thought the honour ought to be participated in by other members of the College.

The gentlemen appointed for the office were Professor Duguid, and Messrs. Collins, Fleming, and the Dean or a member of the College of Preceptors.

The Fitzwygram Prizes.

The SECRETARY read the report of the Fitzwygram Prize Examination.

Gen. Sir F. FITZWYGRAM said there was no doubt that the number of competitors for these prizes had been somewhat unsatisfactory, and he wished to give notice that next year the competition for them would be limited to gentlemen who passed with great credit, but would be extended to members of the Royal College of Veterinary Surgeons who have held their diploma not more than two years instead of one year as heretofore. The number of marks necessary to pass on from the first to the second stage of the competition would be raised from fifty to seventy-five per cent. on the numbers allotted to each subject.

The SECRETARY intimated that two letters had been received from Professor McEachran, of the Veterinary College of Montreal, addressed to the Secretary of the Royal College of Veterinary Surgeons, in which he wished to lay before the Council a petition for affiliating the College at Montreal with the Royal College of Veterinary Surgeons.

The SECRETARY was instructed to write to the effect that the Council had no power to affiliate under the Charter, and that the matter rested entirely with Her Majesty's Government.

The obituary notice was read.

On the motion of Mr. Gowing, the Secretary was instructed to send a letter

of condolence to the family of the late Professor Varnell, whom Mr. Gowing described as a much-respected and worthy member of the profession.

Finance Committee.

The report stated that the vouchers and receipts for payments during the preceding quarter had been examined and found correct. The present liabilities amounted to £307 13s. 5d., which the Committee recommended should be discharged. This would leave a balance at the bankers of £389 16s. 1d.

On the motion of Mr. Batt, seconded by Mr. Whittle, the report was received and adopted.

Cheques were ordered to be drawn for the current expenses.

Certain improvements in regard to picture-frames, carpets, and mats, suggested by the House Committee, were relegated to that body for consideration.

A letter was read from Mr. Dyke Broad, of Bath, enclosing the sum of £2 16s. od., as a balance from the late West of England Veterinary Medical Society to be added to the College Fund, and the sum of £2 4s. od. as a subscription from himself.

A letter was read from Mr. Thomas Moore, of 11, Upper Berkeley Street, Hon. Sec., *pro. tem.*, of a local society of Veterinary Surgeons, asking for the use of the Board-room of the College for their meetings.

After some discussion, the Secretary was instructed to write to the effect that the Council were unwilling to grant the use of the Board-room for the purpose referred to.

The SECRETARY submitted a specimen of the diploma to be granted to the members of the Highland and Agricultural Society.

Mr. COLLINS gave notice of motion of alteration in bye-law No. 4. The Army Veterinary Department numbered something like 150 or 160 members, and the majority of these were not at present in the position of recording their votes. There were at the present time over eighty members in India, and nearly twenty in South Africa ; and these gentlemen were, to all intents and purposes, shut out from voting. His object in proposing an alteration in the bye-law was, to enable them to record their votes. He proposed to add to the words "every member," the words "in the United Kingdom," and also "that in the case of members resident abroad it will suffice if they forward to the Secretary, in a prescribed form, so as to reach him seven clear days prior to the election, the names of not more than six gentlemen for whom they wish to vote."

The Secretary was about to read two letters from Professor Walley when, on the motion of Sir F. Fitzwygram, seconded by Mr. Taylor, it was resolved, that the letters be not read, on the ground that such a course was unusual, especially in a case where members of the Council could very well be present.

It was announced that Mr. Fleming, who was absent on duty, desired that the consideration of the motion standing in his name should be suspended until the next annual meeting.

This concluded the business of the quarterly meeting, after which

A Special Meeting

was held, for the consideration of certain alterations in the bye-laws. Mr. P. TAYLOR proposed, pursuant to notice of motion, that bye-law No. 37 be expunged. As it stood, it provided that "No Student shall be allowed to present himself before either section of the Board of the Royal College of Veterinary Surgeons for his first, second, or third examination more than three times." He considered this bye-law to be grievous, cruel, and unjust.

In support of his views he adverted to the arguments he had advanced on a previous occasion when the question was mooted, and also combated the views then advanced by Mr. Collins, Sir F. Fitzwygram, and others. As a special proof of the injustice of the bye-law, he instanced the case of Mr. Wallis, which had been brought forward at the last annual meeting.

Mr. GOWING, while seconding the proposition, said he differed somewhat from the views of Mr. Taylor, and thought there should be some stimulus to the students in the shape of doubling the fees, after having been rejected on the third examination.

Mr. GREAVES supported Mr. Taylor's motion, remarking that the students ought to have as many chances as were necessary.

Mr. COLLINS thought that none of the bye-laws ought to be tampered with without sufficient grounds. It had been said that the matter of rejection ought to be left to the schools; but with all due respect for the schools, he thought this view might be challenged. By the retention of the bye-law the hands of the principals of the colleges would be very materially strengthened, because they would be able to turn round to the bye-law and get rid of any difficulty, knowing that if the student remained at the college he would not do himself, the college, or the profession any credit. The second argument that had been advanced by Mr. Taylor was that there was no such bye-law in the clerical, legal, or medical professions; but he would point out that the position of those professions was assured, and when the position of the Royal College of Veterinary Surgeons had reached a similar standpoint, then it would be time enough to abolish the bye-law. The profession could not afford to have any inefficient members in its midst. The next argument that had been used—and the one which, in his opinion, was the weakest of the lot—was that students, if they were rejected three times, would still continue to practice as quacks, and the country would be over-run with them. But he would ask whether it was not better that inefficient men should be known in the country to be quacks than that they should be palmed off on the public as efficient Veterinary Surgeons. The fraud would rest with the Royal College. The next argument was the sentimental grievance. It had been stated that the student would be ruined and would have no prospect of gaining a position in life and society, and all that sort of thing. These sentiments, no doubt, did great credit to his friend Mr. Taylor, who had a large heart and a warm nature; but he contended that the profession could not yet afford to indulge in sentimental legislation. The object of the Council was to raise the standard of the profession, and students knew what they might expect when they entered into the contest. If the idea were carried on to its logical conclusion, and the feelings of the students and their parents were exclusively and entirely studied, the result would be that the tone of the examinations would be lowered. If the bye-law were cancelled, he believed that a large percentage of idle, lazy, and perhaps dissipated students would be constantly hanging about the colleges, and that the principal incentives for them to work would be taken away. He had been told by some of the professors that students did not work so well now as they did in former times. For years past the object desired by the profession, and advocated by the veterinary periodicals, had been to raise the standard of education. The very name of education had become so hackneyed that one was tired of hearing it; the reason being that the profession was tired of words and wanted actions. With regard to what occurred at the annual meeting in regard to Mr. Wallis's case, it ought to teach them a severe lesson. He never saw a more humiliating spectacle than that of a member of the profession taking advantage of his position, and airing his grievances in public. There might be a great complaint that a verdict was snatched on that occasion, but the gentlemen assembled at the annual

meeting formed a very small fraction of the profession, and he submitted that if the question had been put before the profession generally in its proper bearings and different lights, the verdict would have been very different. What was the immediate result of that? No sooner had Mr. Wallis sat down than one of the oldest members of the profession got up and impugned the very honesty, integrity, and capacity of the examiners. What he meant was, that if students were rejected more than three times, it arose, not from the stupidity of the students, but from the stupidity of the examiners; and he ventured to say that the speaker would not have ventured to make such a statement as that if it had not been for what previously occurred at the annual meeting. He was of opinion that the abolition of the bye-law would prevent the realization of the higher aspirations of the more enlightened members of the profession. Whatever might be the fate of the question now being discussed, he hoped that the profession would not hereafter accuse the Council of being false to their true interests, and of being possessed of a ricketty backbone. He moved as an amendment, that the bye-law stand as it is.

General Sir FREDERICK FITZWYGRAM, while somewhat acquiescing in the resolution arrived at on this subject at the general meeting, felt constrained to give his vote against the motion. He did not think the repeal of the law would be of the slightest advantage. It was not the object of the Council to admit into the profession incompetent or unqualified men, and he thought there was no one present who had watched the course of the examinations but would admit that if a man had had three chances and three rejections he was never likely to become a useful member of the profession. The rule had hitherto worked well. He had expressed his views on the subject, and would leave it in the hands of the Council.

Mr. HARPLEY referred to the circumstances under which the bye-law was made, and the time and trouble that had been taken before the Special Committee to inquire into the subject had arrived at its conclusion. The object of the Council at the time the bye-law was passed was more especially to get rid of a class of men who could never enter the profession, not having the ability to do so. He agreed with the views that had been advanced by Mr. Collins and Sir Frederick Fitzwygram, and would decline to vote for the repeal of the bye-law.

On the question being put to the vote, two members voted for Mr. Collin's amendment, and twelve for the motion, which was therefore declared carried.

Mr. GOWING gave notice of the following motion :—"Bye-law 36." "But should he not pass his third examination, then shall he pay—should he again wish to present himself—a fee of six guineas at each subsequent re-examination, and seven days prior thereto."

The PRESIDENT proposed the following alteration in bye-law 46 :—

"No examination shall be held unless there be nine candidates for one division of the examination; but if a board be assembled, and there be a candidate or candidates for another division, the examiners for which being within reach, then a board shall be constituted to examine such candidate or candidates."

He explained his reasons for the proposed alteration, which, he thought, would be not only in the interest of the students, but of the profession.

Sir FREDERICK FITZWYGRAM pointed out that the bye-law was passed after due deliberation, and with the view to raise the funds of the college, which at the time were at a very low ebb, and he asked the Council to adhere to the rule to have no examinations unless there were a sufficient number to pay the cost.

After some observations from the President, Professor Pritchard, and Mr. Greaves, Mr. HARPLEY seconded Sir Frederick Fitzwygram's amend-

ment. It was ultimately agreed that the consideration of the question be postponed.

General Sir FREDERICK FITZWYGRAM moved an alteration in bye-law 7, which he said at present provided that the scrutineers shall be elected at the annual general meeting. The effect of the existing rule was that certain gentlemen who were good enough to come to the meeting, were shunted to the outer rooms while the discussion was going on, and where they could neither see nor hear. It was proposed to alter the rule to read as follows :—"At a meeting prior to the annual meeting, the Council shall choose from among the members of the profession not less than six persons to act as scrutineers in the matter of the election of the members of Council, etc." The object of that was that the scrutineers would be present an hour or two hours sooner than the time at which the annual meeting was held.

Mr. P. TAYLOR seconded the motion, which was agreed to.

The proceedings then terminated with a vote of thanks to the President.

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

ON July 8th the half-yearly meeting of this association was held at the Norfolk Hotel, Mr. A. H. Santy, F.R.C.V.S., in the chair. Amongst those who honoured the meeting with their presence were Dr. Jackson, F.R.C.S., of Plymouth ; C. Williams, Esq., F.R.C.S., Norwich ; Dr. R. J. Mills, Norwich ; and J. D. Allman, Esq. ; there were also present Messrs. F. Low, G. G. Whincop, W. Shipley, L. Butters, L. Smith, J. K. Gooch, D. G. Bunting, R. Newson, T. E. Auger, R. Howard, E. Barker, T. S. Barker, and F. Gooch, (veterinary student). Letters of apology were read from the Secretary (J. D. Overed), J. S. Bower, Professor Pritchard, and G. Fleming, Esq., F.R.C.V.S. The minutes of the meeting having been taken as read from the unavoidable absence of the Secretary, the Auditor's report was received, the association being in a very flourishing condition. The officers for the ensuing twelve months were unanimously elected as follows :—Mr. A. H. Santy, F.R.C.V.S., President ; Mr. W. Shipley, M.R.C.V.S., Mr. F. Low, M.R.C.V.S., Mr. E. Barker, M.R.C.V.S., as Vice-Presidents ; Mr. J. D. Overed, M.R.C.V.S., as Secretary and Treasurer. The President then introduced the essayist, Mr. G. G. Whincop, M.R.C.V.S., who read a very instructive and exceedingly interesting paper, "On Matters of an Hereditary Nature in relation to Disease," which was followed by an animated discussion, in which the medical gentlemen and most of the members took part. Mr. L. Butters, M.R.C.V.S., described a case of pelvic abscess in the horse and his mode of operating on the same, with the result, the animal being viewed in the hotel yard by the members. The President then demonstrated his method of extracting the molar teeth of the horse. A cordial vote of thanks was accorded to the essayist, with a request that his paper might be forwarded to the veterinary journals for publication ; and a vote of thanks to the President concluded a very pleasant and instructive meeting, in which the members of the medical profession expressed their entire satisfaction, and that in time, by unity of purpose and a steady application to scientific questions, the association would carry weight and make itself heard on the theories of the day which particularly affect the veterinary profession.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

(*Continuation of Mr. Hopkin's Paper on Antisepticity. See page 43.*)

THE air confined in the beds, impregnated with exhalations from the body, and heated by the same means, undoubtedly furnishes an atmosphere remarkably genial for the growth of bacteria and their specific products.

Secondly, to produce Septicæmia there must be absorption of the septic poison, and many of the wounds in our cases are more exposed to the atmosphere, which must have a tendency to prevent absorption, and they are as a rule more isolated. We have seen that bacteria are, under some circumstances, inert; as, for example, in the circulation, than they are in a soil that does not favour their growth, and when, so far as we can judge, they do not produce these septic effects; whilst the Bacillus Anthracis of splenic fever find it a most genial and fruitful home. Again, the process of putrefaction is in abeyance at a low temperature, and the wounds in our patients are not, as a rule, in so warm an atmosphere as those of man, and more ample exit is afforded for any discharge; but independently of Septicæmia, wounds in which the process of putrefaction is at work do not heal well. Even if the septic poison be not absorbed, and we have not its toxic effects to rob us of our patients, we have its retarding influences. The way in which wounds were supposed to heal will be familiar to you all, and the desire to be able so to treat them that there should be no putrefactive suppuration, has led to the search after what is now generally known as the antiseptic method.

The physiological meaning of antiseptic is, "anything that destroys or annuls the physiological properties of septic organisms or their germs."

Many methods have been tried. The chemist, physiologist, and pathologist, by their united labours, have given us a long list of drugs and other agents which are antagonistic to the life of bacteria and septic germs, among which we find chlorine 1 in 100,000, permanganate of potash 1 in 10,000, salicylic acid, carbolic acid 1 in 100, high temperature, and most of the essential oils. After the discovery of these, there was still another difficulty to overcome—how to apply them in surgery in such a manner that they should, whilst not interfering with the healing process, still prevent, or if present, destroy the agents which produce putrefaction. Associated with this subject must now and always stand the name of Professor Lister. He has very kindly sent me a pamphlet, containing the latest and most improved *modus operandi* of his method of applying his antisepticism to surgery. I shall as briefly as possible detail it to you, and after glancing at some of the marvellous results achieved by the use of it in human surgery, call your attention to the cases in our practice in which antisepticity as now practised, or in some other form, may prove advantageous. What it is doing for Ovariotomy. It was my privilege last month to see the operation of Ovariotomy performed by one of our local surgeons. The cyst weighed fifty-six pounds and contained several gallons of fluid. It was a most hopeless case, and although the poor woman died in rather less than a fortnight after the operation, there is good reason to believe that if the operation had not been delayed so long it would have had a happier termination. This operation was suggested by Morgagni in 1761, performed in America by Mr. Dowel in 1809, and successfully by an Italian surgeon in 1815, the woman bearing seven children after it, five single and twins. The after treatments consisted of rigid diet, bleeding next day, tartar emetic, and lemonade—showing some cases will recover any way *vis medicatrix*. In 1850, Laurance writing about it, said the mortality was so great that he doubted if it would not endanger the character of the profession if it was continued. In less than

twenty-five years after this, Lord Selburne calculated that Spencer Wells, by his 500 successful cases, had added 10,000 years to the lives of European women.

In reviewing twenty years' work at the Samaritan Hospital, S. Wells says that in 1855 he went out to the Crimea, returning in 1856. In 1858 he attempted his second case on a poor woman from the Workhouse Hospital, which was successful, and the last he heard of her was that, thanks to his operation, instead of her dying a pauper in the workhouse, she was well and married to a man with a salary of £240 per annum. The last two years he operated on 68 cases with 61 recoveries and only 7 deaths, whilst in earlier years 1 in 3 died.

He then goes on to speak of the antiseptic method, in which he hopes for great things for the future.

Dr. Marion Sims, an American surgeon of note, who has been here on a professional tour, reports that eleven cases in which he saw the operation performed in a fortnight, *à la* Lister, all did well, and expressed himself enthusiastically as to the merits of a method which robs the most serious of surgical procedures of all extraneous perils to life.

A method that enables the surgeon to lay open the abdominal cavity, break down adhesions existing between the ovarian sac, abdominal walls, bowels, omentum, and uterus, secure with ligature bleeding vessels, and by means of sponges remove from these organs and cavity all blood, serum, and other foreign matter, without producing *septic peritonitis*, is to say the least of it, a mighty triumph for modern antiseptic surgery.

Professor Lister, on hearing from Professor Tyndall about air optically pure, tied a piece of cotton wool to the nozzle of a pair of bellows, and on examining the current of air after passing through the wool, and finding it free from organisms or particles, he determined to try cotton wool as a dressing. It answered well until the discharge soaked through, when putrefaction occurred throughout the entire mass of the moistened part down to the wound, even within twenty-four hours. It is only when dry that cotton wool can arrest the progress of microscopic organisms, which have ample room to develop among its meshes when filled with a putrescible liquid. This proves that pus blood and dead tissues do not putrefy through the influence of atmospheric gases, but through the particles of dust which may be prevented entering a wound by filtering the air, or destroying them by means of an antiseptic agent.

Professor Lister's method of procedure in his antiseptic treatment is to wash with carbolic water, one to forty, all instruments, sponges, operator's hands, and the part to be operated upon. He next produces a spray (composed of water containing the acid in proportion one to forty), with which he envelops the operation. In case of the spray failing him, he has what he terms a guard, a cloth soaked in carbolic acid water, with which he covers it until such times as the spray apparatus is again brought into play. Any arteries that may require ligaturing he uses the carbolised cat-gut, which possesses the advantage of not acting as a foreign body; being an animal substance, it is absorbed. It was universally believed, and is still by many, that when you ligature any internal structure, as a blood-vessel, that sloughing of the distal portion must ensue; but latterly it has been proved by practice, by direct experiments, and by *post-mortem* examination, that if the ligature be cut off short and guarded against the *putrefactive process*, such a result is almost unknown. Skin and threads were absorbed in a week. Skin, twelve threads in ten to twelve days. Assuming the operation to be completed, the wound is wrapped in seven or eight folds of antiseptic gauze, being a loose cotton fabric, the fibres of which are impregnated with carbolic acid securely lodged in insoluble resin, to prevent it losing its antiseptic properties; over this is placed a layer or covering of hat-lining.

Carbolic acid itself does not assist the healing of a wound, and in wounds treated in this way there is a copious serous discharge, which is removed by means of antiseptic India-rubber drainage tube or some threads of the cat-gut which are left protruding in a dependent part.

In his record of cases thus treated, he mentions a case of psoas abscess in a man aged twenty-seven, who from the age of eleven had had antero-posterior curvature of the spine, and that he evacuated between fifty and sixty ounces of thick pus, with lumps of curdy material and several spiculæ of cancellated bone. The dressing was changed every four or five days, when the serous discharge became slighter. He is now perfectly recovered and a healthy man. This is only one of several, whilst under the ordinary treatment they are generally followed by hectic or irritant fever and death. For operating in aneurism and hernia it reduces the risk to a minimum, whilst joints and synovial sacks and bursæ can be opened with impunity.

Paracentesis Thoracis. In this it is the only method that will justify the surgeon or veterinary surgeon undertaking the operation. So much for Professor Lister's antiseptic surgery.

I will now, gentlemen, if I have not already trespassed too long on your time and patience, try and show you how a modified antiseptic treatment may be adopted with the advantage in our practice. Wounds, injuries, and operations that are followed by certain diseases, will depend in a great measure upon the state of the system at the time of their infliction, the surrounding circumstances, and the parts affected. We will first consider *castration* in the horse, which is perhaps the operation of all others most liable to be followed by *Peritonitic Septicæmia.* So far as I am aware, this fact has not been published or noted, and it is from personal observation that I have come to this conclusion. Perhaps there is not a member of our profession who has castrated any number of horses, that has not been made uncomfortable by witnessing the painful symptoms exhibited by some unfortunate beast suffering from Peritonitis, as a sequel of the operation be performed some few days previous. Bacteria have undoubtedly a preference for exudates from serous membranes. In these they rapidly multiply and produce their septic properties. It is not often, excepting in castration, that a serous surface and exudate is prepared for their reception in our patients; but whenever it is, the veterinarian may not only expect their presence, but their toxic effect, if they or their germs are within reach of it. Practical lessons are, as a rule, those which speak most forcibly to us, and since I have been studying this subject, one that occurred to me some twelve or thirteen years back has become plainer, and will serve as a good illustration and proof of my argument at the same time. During the early part of my pupilage, it was my misfortune to cause the death of three out of four calves that I performed the operation of castration upon, with a knife that had been used some days before whilst helping to making a *post-mortem* examination. As I was only young and inexperienced, the farmer very kindly put it down to that, and after some little blustering and rather strong language the matter was, fortunately for me, allowed quietly to subside. The real cause would have remained a mystery had not my old tutor, Mr. Schofield, of Pontefract, shortly afterwards seen me using again my castrating knife to cut some decomposing animal tissue. He knew the practical fact that to castrate an animal with an impure knife was followed by death. We now know that if we inoculate an animal with septic matter whilst performing the operation of castration, that it will be followed by *Septicæmic Peritonitis*, as in the cases just recorded. There was another fact demonstrated, that the severity of the disease depends on the amount and quality of the inoculation. The first calf operated upon was the most rapidly fatal case, whilst the last done was not fatal, and the last but one lingered for some time before succumbing.

That Septicæmic Peritonitis may follow when clean instruments are used, will be best shown by relating to you another case that came under my notice a few years back. I operated on a three-year-old colt belonging to a trainer, and stabled in a box near the tan-yard. All went well for some time, excepting that there was Schirrous of one cord. This was removed in the ordinary way, but was followed by Septicæmic Peritonitis and death.

That it is not caused by carelessness in operating, as the public generally suppose, will be proved by the fact that Professor Williams told me every colt operated on and kept in proximity to a dissecting-room died, and when we were students we would not operate on a colt in the college premises. On account of this we can readily trace the cause of infection in all these causes—(1) by the knife in the calves; (2) from the tan-yard in the case of the three-year-old colt; (3) from the dissecting-room. In these cases remove the cause, and I should myself try some antiseptic treatment when suspected.

Professor Chauveau has also demonstrated another fact in connection with operations and state of the system. In the operation of "Bistournage," which consists in twisting the spermatic cord, without making any external wound, in such a way that the circulation is permanently stopped; and of the thousands of operations of this sort which are performed annually on the Continent, none are ever followed by infective consequences. But when he introduced a dose of septic matter into the blood-stream, the textures around the organ became the seat of acute diffuse inflammation which soon extended to adjoining parts, and in some cases terminated fatally, depending on the amount of septic matter introduced.

The immediate cause of the septic inflammation of the testicle was evidently the injury to which it had been subjected, but no infective process would have developed itself had it not been that masses of septic matter were at the time of the injury circulating in the blood-stream, some of which were conveyed to the injured parts and then became centres of infective action. On the other hand, the constitutional effects which were produced by the injection of the septic liquid into the blood, would have passed off without endangering the life of the animal if there had been no injured organ to afford the necessary conditions for the development of a septic focus. Predisposition, as well as state of the system, will no doubt, as before stated, play a part, because wounds do heal without Septicæmia, when exposed to what in another case proves a source of infection. Parturient Peritonitis and Metritis illustrate this, mares being most prone to absorb septic matter after parturition, whilst cows are the reverse; difficult cases of parturition in the one, with abrasion of the mucous membrane, being much oftener followed by disastrous consequences than in the other.

Two cases of Purpura Hæmorrhagica that came under my notice contain instructive lessons as to how, without care, we may be the means of producing the very state of things we are most anxious to avoid. A black five-year-old gelding affected with Pupura Hæmorrhagica was brought from an impure and badly ventilated stable to our premises for treatment. The effusion into the areolar tissue around the respiratory passages of the head was so great that it became necessary to perform tracheotomy. About three days after this we noticed a nasty offensive ichorous discharge from the wound, the animal dying in eight days—a well-marked case of what was then called "Pyæmia," or the Septicæmia of to-day. I have now to acknowledge how unintentionally I was the means of inflicting an injury upon a member of our Association, and one of his clients. He asked me to see a case of Purpura under treatment in his infirmary, and which I suggested would be relieved by the operation of tracheotomy; and in response to a request, I sent him a tube, as those he had were either in use or not to hand. We unfortunately sent him the one that had been used in our case that died

from Septicæmia. The result, although my assistant assured me he had thoroughly cleansed it, was most disastrous, his case dying some time afterwards, also a well-marked case of Septicæmia. In the human surgeon's practice they do not now consider it safe to perform tracheotomy in hospitals, unless the patient is kept in an antiseptic steam tent, that is a tent with steam mixed with carbolic acid. I can imagine some of you saying to yourselves, Well, this is all very well where it can be applied, but we can never do to be bothered with all this cumbersome detail. I will, without enlarging, try and demonstrate to you how we can with the greatest benefit apply a modified form of antiseptic treatment in our cases. I have here a portion of the shaft of a cart, which in a collision was driven into the muscles of the thigh of a blood chestnut mare. It entered about four or five inches above the right stifle and pursued a course from before backward, coming out through the biceps rotata tibialis muscle. The force must have been terrific, first of all to make it pierce the skin twice, traverse all that mass of muscle, and after making an indentation on the face of the dash-board, it was broken off as far as you see it, and the mare was brought from Cheetham Hill Road to Moreton Street, with this buried in the muscles of the thigh. Very considerable force was required, after a rope was passed through the D, to withdraw it. Now the treatment in this case was strictly antiseptic, and although exceedingly simple, most satisfactory. We first passed a large strong probe armed with cotton wool and saturated with carbolic acid and glycerine into the wound to destroy any germs; then so fastened a large piece of lint saturated with the same that it covered both external openings. No water in any form whatever was allowed to go near it—no fomentations, no cold-water pipe; simply wiped away the discharge with dry materials, as tow or wool, and kept the lint saturated with the carbolised oil or glycerine. In a fortnight the posterior external opening was closed; in three weeks, from the anterior one just a drop of sweet pus occasionally oozed; whilst in less than four weeks it was entirely healed and the mare discharged. In a case like this it would be almost impossible to prevent suppuration, but this method will prevent putrefactive suppuration.

The late Mr. Haycock used to say wounds did better without water; that it washed the healing away. It is needless to say that I was then not open to conviction, and although he was wrong in his theory, the fact he had noted was correct as all facts must be, and will, if not now, at some future time be acknowledged by all surgeons.

It is astonishing what prejudice custom creates. It is said of an old departed yet celebrated French surgeon that the whole body of surgeons in his day condemned him because he had the courage to operate on the wounded, after a great battle, before the boiling oil that it was the custom to pour on wounds and the stumps after amputation, could be procured. I say, his professional gentlemen shunned him as one likely to bring discredit on his calling, because he had noted the fact that his cases did better when treated without the oil, and he therefore determined to discontinue its use.

Whilst speaking of bygone days, I would just remark that no doubt many of the old severe dressings applied to wounds were too antiseptic, and that they not only destroyed the germs, but the tissues too. The operation of neurotomy is perhaps one of the most convenient in our practice in which to apply antiseptic treatment, which can be done in the following manner. Under the limb to be operated upon place a dry clean towel over the straw, touch with an antiseptic, as carbolic and glycerine, the skin to be cut, and your instruments, and instead of using a sponge, if there should be hæmorrhage, use the dry towel. After the operation, touch the whole of the interior of the wound with the antiseptic dressing; put in a wire or cat-gut suture if necessary; then a small pad of cotton wool soaked in the dressing, next to the wounds; over that

another pad of dry cotton wool and a *dry* bandage, which allow to remain undisturbed until such time as you think the wounds are healed. With this method there is little or no swelling of the limb, no suppuration ; and the last case in which I operated the mare was at her usual work in seven days, healed and sound. One word of warning. When you have a constitutional or strumous diathesis in your patient, antisepticity will not remove that.

Summary.

Discovery and proof that the germs which produce, under favourable circumstances, bacteria, are floating about in the air. How they got there we are, as yet, unaware ; but that whilst the germs are aerial the parents are aquatic, and "prefer swimming to flying." They are capable of rapid growth by means of division, and are of various kinds. Whilst some appear harmless, others are or have the power of generating specific properties. Bacteria, of some kind, are necessarily present before putrefaction can take place ; this is proved by the fact that matter most prone to take on putrefaction will not do so, if only pure air is permitted to come in contact with it, if the air be either filtered or rendered sterile by the use of some antiseptic agent, that Septicæmia is due to the introduction into the system of septic matter, which is a product of putrefaction produced by bacteria.

The agents that destroy this and render anything containing it sterile, are termed antiseptic agents. Antiseptic agents are not to heal wounds, but to place them in such a state that the healing process only will be allowed to operate. In conclusion, gentlemen, this is an important subject that I have tried to place before you. It contains but little matter the result of my own individual effort ; for the main features we are indebted to the special scientists. My part has been simply, yet efficiently, I trust, to apply them to some practical purpose ; and whilst science, whose soul is explanation, halts with hostile front at mystery, who shall say, until the strife is over, which of her children shall most deserve the victor's wreath for his crown ?

An interesting discussion followed, in which the following gentlemen took part :—Messrs. P. Taylor, W. A. Taylor, W. Pallin, R. Reynolds, D. Hutcheon, Mr. Whittle, Dr. H. Briggs, Mr. Paton, &c.

A cordial vote of thanks was accorded the essayist for his very admirable paper, and also to the chairman. SAML. LOCKE, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

THIS Society met on June 5th, Professor AXE, in the chair. The SECRETARY read the minutes of the last meeting, which were confirmed.

Mr. BANHAM read a description of a cyst as follows :—

This specimen was sent to the Editor of the VETERINARY JOURNAL, and in the absence of Mr. Fleming, for whom I have to apologise for not being here to explain the particulars of the specimen himself, I will endeavour to do so for him. The following is a copy of the letter sent with it :—

Midmar, *May 29th.*

Dear Sir,—I have forwarded to you, per rail to-day, a testicle which I removed from a "Rig" colt the other day. The testicle contained some serous cysts, and what is apparently a hair from the tail of a horse. I have retained a small portion of the hair to examine with the microscope, as I am very busy just now. I never heard of anything of the kind, so far as I at present remember. I will send you further particulars in a few days.

I am, yours, etc.,
J. R. DEWAR.

The further particulars were received this morning, and are as follows :—

Midmar, Aberdeen, *2nd June*, 1879.

George Fleming, Esq., Editor of the VETERINARY JOURNAL.

SIR,—According to promise I now send you fuller particulars about the testicle I sent you some days ago.

The animal from which the testicle was removed is a two years old Clydesdale colt, black in colour, in good condition; perfectly healthy, and had always been so, and belongs to William A. Mitchell, Esq., Auchnagathle, Aberdeen. I was called to castrate the colt about a year ago, and as there were then some suspicions of his being a "Rig" I examined him as well as I could without casting him, and failing to find more than one testicle I advised the owner to leave him for a year, as he was not very troublesome. I had little hope, however, of the other testicle making its way into the scrotum in the interval, as the one already there, the right one, was more than double the ordinary size, and apparently healthy.

As the colt was beginning to give annoyance, the owner determined to have the testicle that was in the scrotum removed, and on the 26th May last I had him cast, and after a vigorous search both externally and per rectum, and failing to find the missing testicle, I removed the one I could get by torsion. There seemed little difference in the size of the testicle since last year. I intended removing it by clams, but finding the cord much smaller than corresponded with the size of the testicle, and having, a few instruments ready, in the hope that I might detect the presence of the other testicle in the inguinal canal, I at once, as I have said, removed it by torsion. It was not until I had exposed the testicle and grasped it in my hand, that I observed anything wrong with it—its intense hardness at one point taking my notice. All the structures exposed, other than the testicle, seemed perfectly healthy and in a normal condition. On afterwards making a longitudinal incision into the testicle, I found five cysts containing a transparent, serous-like fluid; the largest containing, perhaps, about an ounce of fluid, the smallest about a dram. You will see that part of the testicle is of a gristly cartilaginous nature, and that there is a piece of distinctly osseous tissue also present. What seems undoubtedly to be a hair from a horse's tail was curled up in an almost dry cyst-like space, very much as you will have found it, one end of the hair being free, and standing out two or three inches when perceived. I left the whole as much intact as possible, so that you might see and examine it for yourself.

I have heard of bony tissue being found in the testicles, but I don't think I ever heard of a hair such as that sent you being found in one. I have often seen hairy tumours, or rather cysts lined with hair-producing tissue, in the vicinity of the skin, which become gradually filled with hair, to the exclusion of their fluid contents, if allowed to remain long enough. But should you fail to find a hair follicle and papilla in the testicle, the question naturally arises, are we to look upon the hair as a foreign body? also, how did it come to be there? Was it introduced into the vagina of the colt's dam by the penis of the sire? and has it from thence found its way into the uterus, and, remaining aseptic, been no obstacle, save from its physical properties, to the impregnation of the ovum and development of the fœtus, been involved in the fœtal structures, and becoming ultimately lodged in the testicle, remaining there until now?

I hope to have your opinion regarding it.

I am, sir, yours respectfully,

J. R. DEWAR.

The specimen before you gentlemen is, I think a remarkable one; for we see, as Mr. Dewar remarks, the hair more closely resembles that of the tail, and not, as is the rule I believe, of the general integumental hair; moreover,

when it was first received there were as many loose hairs as are attached, showing I think, that they had previously been shed, and I have no doubt would have filled the sac as age advanced; the hairs being annually shed.

In answer to Mr. Dewar's first question, I think we may say it is not a foreign body, nor can it be looked upon as being introduced into the uterus *per vaginam*; for I think you will all agree with me, that even if a foreign agent gained access to the uterus in the way he describes, which is rather improbable, it could scarcely become imbedded in any organ or tissue of the embryo, especially into such a remote organ as the testicle. Mr. James Law, in the *Edinburgh Veterinary Review* for 1863, gives an account of a dermo-pilous cyst, situated beneath the Levator Humeri muscle of a bullock. The walls of the cyst resembled delicate skin covered with an epidermoid structure, and contained numerous hairs, about an inch long, resembling those of the common integument of the animal. The cyst was filled with a granular substance, having a repulsive odour, and seemed to be sebaceous matter; under the microscope it appeared to be chiefly withered and flattened epidermoid cells, granular matter, and a few oil globules. He goes on to say that cysts containing hair, and less commonly teeth, bones and other structures, are most frequently seen in the ovary, but have been met with in the uterus, abdomen, anterior mediastinum, scrotum, testes, stomach, and intestines, or bit, tentorium, palate, and neck. As to the origin of these abnormally-situated structures, Dr. Jones denies their being the remains of partially absorbed fœtuses, and considers them to be erratic productions of the Graafian vesicles acting under the influence of some unnatural stimulus; but this view does not account for their appearance in other parts of the body. When they occur in the dura mater, it is possible that they may arise, as Dr. Ogle says, from inflammation being set up between the dermis and dura before the fontanelle is closed, causing union of the two structures, and a portion of the skin being drawn inward, and finally enclosed in the cranium. But this does not explain the formation of these cysts in such distant organs as the testicle, or in Dr. Gordon's case, in which he found a tumour containing portions of skin, fat, serous fluid, sebaceous matter, and what appeared to be the bones of the upper jaw, with seven well-formed teeth imbedded in it, in the anterior mediastinum of a young woman twenty-one years of age. Nor do I think that Professor Vrolik's idea that they are due to the enclosure of a fœtus, or a portion of it, within the body of its brother or sister—*fœtus in fœtu*—will hold good in such cases; but I think we must look upon them as congenital in another way: probably due in some way or other to the anomalous division or folding of the *blastoderm*. I do not know, myself, sufficient of embryology to enable me to propound a theory as to how it could be possible for a portion of that layer of the *blastoderm* which forms the skin to become so entangled, so to speak, within the layers which form other organs of the body; but it seems likely, as far as I can see, that this is possible, although perhaps it may not be within our power, at present, to explain the process satisfactorily.

Mr. BANHAM said he should be pleased to hear the opinions of any members, as to the formation of hair cysts in remote parts of the body.

The PRESIDENT said the specimen before them was one of considerable interest, especially in regard to embryology, rather than pathology. The particular form of development, exhibited in the instance before them was by no means uncommon. He had seen such developments in the liver, in the mesenteric glands, and in several instances as dermopile cyst. Only a short time ago a cyst had been forwarded to him of that character, which had, he believed, been removed from near the shoulder of a beast, and was of a very similar nature to that described by Mr. Banham, from Mr. Law's account, except that it contained a quantity of sebaceous matter, in all probability

derived from the follicles which were imbedded in its walls. They were of a very benign character, almost incapable of doing serious harm. It was an interesting question, as to how such productions occurred in the remote parts of the body. Probably, as Mr. Banham had suggested, and as he believed was generally considered, they arose from some eccentric or erratic division of the blastodermic membrane.*

Mr. SHAW enquired how long the cyst exhibited had existed.

Mr. BANHAM replied that the colt was two years old, and that probably it had existed in the fœtus.

The PRESIDENT then called upon Mr. Steele, who, on rising, asked permission to add a few addenda to the remarks made by him on Bacteria at the last meeting.

Mr. STEELE said that it had occurred to him that it would form an illustration of the importance attached to the subject of Bacteria, by the scientific world in general, if he made notes upon those papers and works upon the subject which had come under his notice in the month subsequent to the reading of his paper; and he then proposed to give them a short summary of those notices, and to show how they bore upon the paper he had the honour of presenting to them at last the meeting. He had carefully looked through the literature of the subject so far as available to him; and it would be evident from the number of references that there must be very considerable scientific activity in relation to the question. In the first place, the Pathological Society, as usual, had come to the front in this matter. The Pathological Society, he believed, under its late president, Dr. Murchison, appointed a committee to inquire into the subject of pyæmia, and septicæmia. A summary of the result of that enquiry would be found in the *Medical Times and Gazette*, of 31st May, 1879, and from that summary of the report it would be seen that the committee divided the subject of septicæmia into two parts: septic intoxication, and septic infection. Cases of septic intoxication were such as resulted from the introduction of an extremely large portion of septic material into the system, leading to death in a very short time. In cases of septic infection a small amount of infection was introduced into the system, which propagated, and after a time produced its effects, which effects were not in the slightest degree proportioned to the disease.

Arguing from the cases which have been observed in man, they find on record twenty-seven cases of septic infection, as compared with two of pure septic intoxication. Of pyæmia, they record 127 cases within a limited period. The importance of the report, as bearing upon the particular subject of Bacteria, was shown by the fact that in blood taken from eighteen of those patients—the only cases examined—Bacteria were discovered. The committee reported the observation of six forms of Bacteria, all of which forms were comprised under the different species, as he had termed them, in his paper. There were, first of all, the simple jointed filaments, which he had indicated by a series of dots, placed in a chain, termed the leptothrix form; then certain ovoid bodies; then large spherical bodies; then Bacteria, rod-shaped or true Bacteria; and, lastly, protoplasmic rounded bodies, corresponding to large micrococci. The conclusion these gentlemen arrived at with regard to the organisms was, that they were satisfactory as evidence of the existence of disease; but they were not in the position to state that they were the cause of the disease. Another important point of observation, as bearing upon the paper, was one which had been recently published by M. Toussaint, with regard to the nature of Anthrax, and the manner in which death was brought about. They found the organisms extremely prevalent in

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the blood-vessels, so as in many cases entirely to block them up. That confirmed M. Toussaint's theory, that death was produced by mechanical asphyxia, the lungs being locked up by the presence of micrococci. In some instances the report described the vessels as being ruptured, or partly absorbed, and the micrococci were seen suspended in the contiguous tissues. In the larger vessels they formed a layer of uniform thickness, lining the walls. Their distribution in the various organs was irregular. The relation to each other of these several and different forms, which he had mentioned—whether they were simply varieties of the same species, or whether they were distinct species—the committee were not in a position to explain; but the members came to the conclusion that certain chemical changes in the blood were necessary for the development of these organisms; and that such chemical changes in the blood might be induced by the introduction of poisonous matter. In the next place, the *Medical Times and Gazette*, of May 24th, 1879, contained a paper by Mr. D. Watson Cheyne, house surgeon to Professor Lister, of King's College hospital. Mr. Cheyne had observed organisms underneath antiseptic dressings. This was a matter to which, evidently, great importance was attached in the medical journals. There was a leading article, he believed, in each of the journals upon the subject.

These various organisms which were found beneath the antiseptic dressings were always in the form of micrococci, rounded cellular bodies; and the method which Mr. Cheyne adopted was to inoculate a cultivating fluid. At the last meeting he had mentioned three, namely, Pasteur's, Lister's, and Koch's. The cultivating fluid used by Mr. Cheyne was one he did not mention, namely, the cucumber infusion. This was kept at the temperature of the human body for a certain period, and the micrococci were found to undergo active development, and to be converted into the leptothrix form and to become connected in cells in a longitudinal series, but were never seen to assume the true bacterial or rod-like form. From that fact Mr. Cheyne considered himself in a position to state that the micrococci are distinct from true Bacteria. He also adduced certain strong arguments to bear on the subject; his first argument being that he had never observed a micrococci become a Bacteria, or *vice versâ*. The second observation being that the result of the micrococci are chains that seemed to form several varieties, which developed at various temperatures; and third, that these micrococci do not disappear so quickly in a sodium carbonate solution as did the Bacteria. Then he quoted the observation of Koch, who found that micrococci stain with Hæmatoxylen, while Bacteria do not. That was one of his principal arguments. He also showed that while the micrococci by their development only give rise to a faintly sour smell, the Bacteria give rise to the pungent odours which accompany true putrefaction. These arguments of Mr. Cheyne's were treated at some length in his paper, but they seemed to be scarcely satisfactory, because the micrococci might not have been in a satisfactory condition to become the true bacteria under his experimental conditions. There was also this point upon which he laid stress, namely, of the micrococci being stained with logwood was not conclusive, because, as they knew, organisms undergo remarkable changes in chemical structure at various stages of development. He showed that these micrococci which occur under antiseptic dressings are innocuous, and when introduced into the system produce no ill effects. But there were certain micrococci (as they had seen at the last meeting), which produce very deleterious effects. Some had been observed in vaccine, others in the discharges in Diptheria, and so on. He found, also, that the micrococci underneath the antiseptic dressings did not appear till after the dressings had been on some time, and a considerable amount of discharge was collected underneath the dressings; so that the carbonic acid was neutralised to a considerable extent by the micrococcic matter contained in the discharges. It

was well known that carbolic acid when applied to a wound underwent a certain amount of volatilization. Mr. Cheyne made a further important observation with regard to the relative behaviours of the micrococci and Bacteria in certain solutions. Bacteria developed much more rapidly than the micrococci in the simple cucumber infusion. When Bacteria and micrococci together were first introduced, if a certain amount of carbolic acid was introduced into the infusion, it was found that the Bacteria ceased to develop rapidly, and the micrococci were capable of undergoing a considerable development in that carbolic acid. By graduating the strength of the solution micrococci could be obtained which would develop in rather a strong solution of carbolic acid. Mr. Cheyne was inclined to consider that the micrococci came from that, rather than that they were introduced from the tissues of the body. This led them to another point, on which Mr. Cheyne laid much stress, namely, whether the germs exist in the living tissues. They would remember that in his paper he had alluded to that point, and had discussed it at some length. The general opinion seemed to be rather in favour of the view that the germs of bacterial organisms exist in the living tissues, ready, under certain circumstances, to develop freely. Mr. Cheyne had made some experiments on tissues; but he judged that previous experiments had been unsatisfactorily performed, and that the tissues did contain the germs of micrococcic organisms.

In addition to these, he found that an important work has quite recently been brought out by Dr. Lewis, a medical man in the army, who has practiced in India. The book is published in Calcutta; the author is an authority upon those Nematode-Hämatoza forms of parasites which occur in the blood. This gentleman had determined the presence of certain new forms of spirillum in the blood of some species of rats which he had examined, and he found that these spirilla abound in the blood of healthy rats, and apparently cause the animal no inconvenience; and he asks, "Why may not the Bacteria and the spirillum, to which we are accustomed to attribute the recurrent fever, and septicæmia, and also the various forms of Anthrax; why cannot they occur in the blood without necessarily giving rise to inconvenience?" The common theory of the manner in which bacilli produce their effects is, that that they bring about asphyxia; but from the observations of Mr. Toussaint, if they followed his views in the matter, they could understand that it is not through asphyxia that these minute vegetable organisms produce their effects, but rather by blocking up the passages mechanically. An important observation was noted in the review upon the book by Dr. Bastian, as originating from Nägeli, of Munich, one of the highest authorities upon minute vegetable organisms, who said:—"I have, during the last ten years, examined some thousands of different forms of Fusion, Yeast-cells (Selozomycetes), but, excluding Sareiuse, I could not assert that there was any necessity to separate them into even two specific kinds."

They would remember that in his paper he had alluded to the fact that whereas some biologists consider a number of organisms to be distinct forms of micrococci and rod-like Bacteria and Leptothrix and so on, others consider them simply a species of the same organism modified to adapt it to particular circumstances. They would perceive that Nägeli, of Munich, seemed to agree in that opinion. Another important observation had been made: that organisms, in every way analogous to micrococci, had been found in animals suffocated—a point of very great importance; but it must be remembered that there were certain bacilli which were so similar to micrococci, that they could hardly be distinguished, even under the microscope. He had mentioned to them that Leptothrix was the cause of the peculiar taste and dryness of the mouth, and of the fur on the tongue which is experienced on waking in the morning. Then there was a com-

munication to the Royal Society, at its sitting on the 24th April, by a Dr. Butlin, in which he had proved that that was so; he mentioned micrococci and Bacilli-subtilis as occurring in all cases of fur in the month. With respect to the further literature of the subject, there were frequent notices on Charbon in the *Recueil de Medicine Vétérinaire*, and one of the most important points mentioned was in a paper upon "Puerperal Fever," discussing whether that disease in the human female was due to minute organisms. There was a little light thrown on the subject by a communication made to the Paris Academy of Sciences, not long ago; namely, a description of the means of reproduction of bacilli, termed bacillis-puerperalis. He had observed it in 1876, when some of the numerous bacilli in the blood of a woman, who had died in child-bed, were placed in Pasteur's nutritive liquor; so that the matter of the presence of bacilli in cases of Puerperal Fever had been at least provisionally cleared up, though the observations required confirmation.

He might also note that before the Academy of Sciences in Paris, some observations had been made by Mons. P. Migale on the organised dust held in suspension in the atmosphere, and he might tell them that the conclusions advanced were rather important as bearing on the subject. The author deduced the following general results concerning the organised corpuscles of the atmosphere, which exceed $\frac{1}{3000}$ millimetres in size—1st. The prevalence of these in the air is low in winter, increases rapidly in spring, remains almost stationary in summer, and diminishes in autumn. 2nd. Rain always arouses these organisms into activity.

That would explain the point now under discussion, as to why outbreaks of Anthrax occurred, especially after floods, and after wet seasons.

The author came to the conclusion that temperature and humidity influenced their production, and he found them in collected rain-water, though collected with care. That was important, because it was rather doubtful whether the Bacteria existed in ordinary air. It was allowed by everybody that these bacterial putrefactions existed in the water, but whether in the air was disputed by some. Now if they existed in rain-water, which had just passed from the air and been collected with all due precautions, then they were confirmed in the conclusion at which they had arrived, that they were present in common air.

An important observation on the subject occurred in the *Annali del Royale Academia d'Agricoltura de Torino*, the journal of the Agricultural Society of Turin, by Professor Perroncito, on typhoid epizootic in fowls, and the bacteria had an important relation to two remarkable diseases which occur in silkworms, which have been treated of by M. Pasteur. Then, a little nearer home, he observed that in the professional journals it was mentioned that Professor Williams was to read a paper on Bacillus Anthracis at the North of England Veterinary Medical Association; and, lastly, he had been that day very hastily examining a work on putrid intoxication and septicæmia, by M. Gutman, of Russia, which was brought out at Dorpat. That work treated of organisms which give rise to putrid intoxication; and gave a lithographic plate containing six figures of Bacteria.

The book also furnished a very capital *résumé* of the works of different authors upon the nature of putrid intoxication and septicæmia. Among the more remarkable points he had noticed in the work, one was the peculiar figure which was given in the plate of the spores. They knew that he had spoken of these spores as being capable of resisting external influences in a very remarkable manner. Those spores were represented, not as simple rounded circles, but with a little tail-like appendage to them. That was a feature he had not noticed previously in any literature on the subject to which his attention had been drawn, and they would see, from those points which

he had brought before them, that his assertion that the subject was undergoing very considerable investigation was amply confirmed.

Mr. MOORE, Senr., inquired what was the practical bearing of the subject.

The PRESIDENT said that questions would be replied to at the end of the discussion. He might remark that the subject so ably brought before them by his colleague was one of the highest possible importance, trenching on ground in various directions, and dealing with large questions, including that of the origin of life; entering also into the question of pathology. It was more especially in its pathological aspect that they would have to consider it. He was not at all surprised that there was so little to be said about it, inasmuch as the facts were as yet incomplete, and so widely scattered and apart from one another that it was very difficult indeed to draw conclusions; and not only difficult, but as yet dangerous, while the facts remained in their present conflicting condition. Nor was there any wonder that the facts should be as they were, seeing the peculiar nature of the material, and its very peculiar physical properties, and our, as yet, defective means and applications to differentiate them, and to classify the objects referred to by the reader of the paper. Considering all these facts, he thought they could not wonder there was so little to say about it. The wonder rather was that they had arrived at the amount of knowledge already possessed in connection with the subject. They knew that these organisms existed; they knew that they were capable of finding their way into the blood, and they knew, to some extent, that they were capable of doing damage; but they did not know, they had no full account of, their life's history; they did not know what conditions precisely influenced them; they did not know to what extent, or how those influences operate. Until such time as those conditions could be fairly established, it would be very difficult, and not only difficult, but as he had said, dangerous, to draw conclusions. No one could feel more grateful than himself, to the reader of the paper, for having brought the subject before them. It was one which, if it did not just now furnish them with any fact which they could apply, would certainly bring before them matter which was worth thinking about. It would, further, prompt them to break ground which they had not previously done; it would give them a tendency to follow in that particular path which he was sure, sooner or later, must lead to very valuable results. He thought the Society owed a debt of gratitude for the paper contributed to them by Mr. Steele.

The SECRETARY asked if the Leptothrix Buccalis was the same as the Algæ, the vibrion found in the saliva in the morning, leading to dryness of mouth. Amongst the list of antiseptics he thought the reader of the paper had omitted two, viz., hot water and sulphurous acid, being introduced commercially by Professor Tuson, under the name of Sporokton, which he understood to be a most powerful antiseptic.

Mr. GERRARD said he, unfortunately, had not the pleasure of hearing the original paper read, but he could quite endorse what the President had said to the effect that it was a most important subject, one, in fact, that they had very great need to be enlightened about. They should feel grateful indeed for such men as Mr. Steele and the President for bringing forward and illustrating the subject. It was a very abstruse subject; one which ordinary mortals, like himself, engaged in their professional avocations, could hardly turn their minds closely to with anything like advantage; therefore, they should be the more grateful to those who had the means of studying it when they brought it forward, so that the minds of other members of the profession could be directed to it, and profited thereby. The subject dealt, as the President had said, with the origin of life, and had reference to the subject of pathology. He did not know whether the reader of the paper took the ground of spontaneous generation, or the opposite. With regard to its appli-

cation to pathology, he did not know what his ideas might be with regard to the amount of causation, that he had ascribed to it in the production of disease; that is, whether he regarded it as the cause of disease, or only as the effect; whether these bacteria, and these organisms, were produced in the system after the diseased process had sprung up, or whether they were, really and truly, themselves the cause of the disease. He thought a great many pathologists of the day seemed to hold the opinion that they were really and truly the cause of a great many diseases which, hitherto, had been thought to rise, altogether, from different causes. For instance, Splenic Fever, which came very close home to themselves, and which he had seen a great deal of, was generally ascribed to, or thought to be caused by, bacteria. Well, they had at least not proved that it was so caused. In his opinion it was an assumption really not proved, for while they were always sure that these bacteria were there, still it was not proved that they were the cause of the disease. He did not see how they always could cause the Splenic Fever, or there would be very much more of that disease than existed; in fact, if the bacteria were the cause of all the diseases that the advanced pathologists of the day ascribed to them, he did not see why they should not find them very much oftener. So he took the ground that they were not the causes of the diseases, but their results. It was pretty well proved that you could find them everywhere; there was not a secretion of the body, or a cell that did not contain them. The same in milk fever; they only found milk fever, or puerperal fever under very special circumstances, but if these bacteria, and these low organisms were the cause of the diseases, why did not the diseases occur in almost every case? He would like the essayist's or the Chairman's opinion on this subject, for if the Bacteria produced the disease, they would have to alter very materially their views of pathology.

Mr. A. BROAD said he did not think it right to jump to the conclusion that the diseases could not be produced by these Bacteria; for when they inoculated rabbits with the forms, they instantly took the same disease, showing that they had the power of inducing disease; and whether that was the ordinary way of causing Splenic Fever or not, doubtless these organisms could induce the disease in a healthy animal.

Mr. GERRARD said he granted that when once the germs were produced you could inoculate and produce the disease, but he denied that they were in every case the cause of the disease. He held there was always some physiological change taking place before they could manifest their deadly influence; but that, once manifested, you could inoculate and kill as fast as you liked.

The PRESIDENT said he believed the view held in respect to them was that it required, in order that they might operate pathologically, that there should be a previously deranged condition of the system, that the system was not in a state of health. He thought in all probability that might be put in such a manner as somewhat to modify the views expressed by the last speaker, which he did not say were not in some measure correct. If, for example, they took a portion of the blood of an animal affected with Anthrax, and were to implant that blood in the tissues of another animal—whether rabbit, or guinea-pig—and no matter what state of health the animal may be in, as sure as they implanted that blood in the animals, so surely were the tissues destroyed by it. That fact, he thought, would militate against the idea just expressed—at least, to the extent of modifying it; because they could not suppose that all those animals' systems were in a deranged condition, for that would imply a universal derangement. So far as the Anthrax organism was concerned, there did not seem to require any particular or special condition of the system in order to give rise to its action. For himself he was disposed to think that this organism, pathologically, was extending itself a little too

rapidly; that the ground was not being sufficiently cleared; that they were attributing diseases to organisms, when he thought (as sooner or later they might find) they were due to other causes. As had been very justly remarked, organisms may usually be found in the tissues of animals, and he had himself so found them under all circumstances of disease. For instance, in Pleuro-pneumonia, and micrococci in Pleuro-pneumonia lungs, in myriads; but it would hardly be said that micrococci were the cause of the death of the animals which died from those diseases. It was a question which required the greatest possible care in bringing together data, and in seeing that those data were founded upon a sure basis before they formed conclusions. He thought it would be found that some of the diseases of the lower animals, which had been recently pointed to as having their origin in the presence of these lower organisms, originated in some other cause.

Mr. MOORE, sen., said that if those organisms were the cause of disease, there would only be one disease.

Mr. MOORE, jun., proposed the adjournment of the discussion till the next meeting. It was duly seconded and passed.

The PRESIDENT said he was pleased at their decision to adjourn the discussion. There were many points about which he would like to say something. He believed the talking sometimes, if it did not do the hearers good, might do the speakers good; and that ventilating a subject of that description was one way of making them familiar with it to a greater degree than by merely reading through a few pages in a book.

JAMES ROWE, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

AT the monthly council meeting on July 2nd, the Hon. W. EGERTON, M.P., reported that Dr. Greenfield had laid before the Committee a statement respecting the experiments which he had been carrying out, and proposed to continue, with regard to Anthrax, or the disease known as Quarter-evil. They recommended that the grant be expended in the purchase of animals to test the forms of Anthrax in cattle and horses, and the possibility of diminishing the virulence of the disease by inoculation. As these experiments are being carried on, the Director of the Brown Institution is desirous of having information whenever an outbreak of Anthrax occurs, and he would be much obliged by any such case being immediately reported by telegraph (to the Brown Institution, Wandsworth Road), in order that he may make a personal investigation. The Secretary had received a letter from the Metropolitan Board of Works, enclosing a report of the action of the Board in carrying out the Cattle Diseases Acts in the metropolis. The Committee would be glad to accept the offer of the Board to give them any information in their power which might be of interest to the Committee, and to receive any communication from them.

This report was adopted.

NEW MEMBERS OF THE PROFESSION.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons held July 3rd, the following students from the Royal Veterinary College were admitted members of the profession :—

Mr. James Ingham	... ...	Shuttleworth, Bury, Lancashire.
„ John Soulsby	... ...	Whitehaven.
„ William Roach	... ...	Crediton, Devon.
„ Ernest Edwin Batt	...	London.
„ Herbert Hall	... ...	Wragby, Lincolnshire.

Mr. Kirtland Smith	... ...	Louth, Lincolnshire.
„ Frederick John Short	...	Torquay, Devon.
„ Charles Harry Smyth Neate		Lewisham, Kent.
„ Henry James Kelly	...	Foulness Island, Essex.

Mr. Ernest Edwin Batt with great credit.

The following students passed their second examination on July 5th :—

Mr. William Frederick Wright.	Mr. Henry Martin Rule.
„ Enoch Green.	„ Frederick William Whitney.
„ Johnson William Carlisle.	„ John Darby.
„ William Francis Mulcahy.	„ Frederick Elworthy.

Messrs. Johnson William Carlisle and Henry Martin Rule passed with great credit.

The following passed their first examination on July 7th, 8th, and 9th :—

Mr. William Taverner.	Mr. William Davidson.
„ R. Ephraim Liston Penhale.	„ Alfred Charles Wilde.
„ John Sibary Wheatcroft.	„ Evan Wynne Williams.
„ John Henry Penhale.	„ Joseph Rowbotham Kinsey.
„ Tom Cooper Fletcher.	„ Henry Charles Harrison.
„ John Albert Bown.	„ Charles James Humphrey.
„ John Penberthy.	„ Charles Curson Clark.
„ Charles Edward Cockram.	„ John Thomas Holmes.
„ Thomas Pottinger.	„ John Halstead Wood.
„ Henry Hubert Roberts.	„ Arthur Everard Barlow.
„ T. J. Patrick McGuinness.	„ William Green.
„ William Freeman Barrett.	

Mr. John Sibary Wheatcroft passed with very great credit, and Messrs. Richard E. L. Penhale, John Henry Penhale, John Penberthy, Charles E. Cockram, Thomas Pottinger, William Freeman Barrett, Henry Charles Harrison, and Charles Curson Clark, with great credit.

In the Report of the NEW MEMBERS OF THE PROFESSION from the New Veterinary College, Edinburgh, in April last, the name of Mr. Kay Lees, of Oldham, Manchester, was omitted. W. H. COATES, *Secretary.*

Jurisprudence.

IMPORTANT DECISION.

IS WIND-SUCKING A VICE OR AN UNSOUNDNESS?

Exchequer Division, June 24th, 25th, and 26th.

Sitting at Nisi Prius, before BARON HUDDLESTON and a Special Jury.

MESSENT *v.* REA.

THE plaintiff, a gentleman residing in Hinde Street, Manchester Square, London, sought by this action to recover compensation from a horse-dealer carrying on business in Trinity Square, Southwark, in respect of the alleged unsoundness of a horse which he purchased from the defendant, with a warranty, for eighty guineas.

The plaintiff alleged that after he had received the horse he found that it shied ; that it had lop ears, which were supported by an artificial arrangement of elastic bands ; that its teeth were "bishopped" ; that it made "grimaces" and was a "wind-sucker" ; and that in consequence it suffered from incipient blindness. The defendant denied that he had warranted the horse or that it suffered from the alleged unsoundness.

Mr. Philbrick, Q.C., and Mr. Anderson appeared for the plaintiff, and Mr. Charles Russell, Q.C., and Mr. Fullerton represented the defendant.

The following summary of the trial contains the salient points of the evidence adduced on both sides.

The plaintiff, Mr. Messent, stated in his examination by the learned counsel, Mr. Philbrick, that sometime last year, about June, he had complained to defendant of horses previously purchased, and that about the end of that month the defendant called on him and stated he had purchased a very nice bay horse, which he could recommend, and that it would make amends for the other purchases. He could warrant this one indeed it was the best horse he had ever had; and that he would take the low price of eighty guineas for it. The defendant left the horse, although the plaintiff demurred, as his stable was full; but he yielded to the entreaty of the defendant, and the horse was placed in a neighbour's stable. The defendant called on a subsequent occasion to inquire how the horse suited; the plaintiff said he believed very well, but he had been away from home, and therefore could not speak for himself, but his groom had not complained. The defendant, when speaking on soundness, handed the plaintiff the following certificate, bearing date February 4th, 1878.

"This is to certify I have this day examined a bay gelding, six years off, by the order of Mr. Rea, and I do not detect any unsoundness.

"(Signed) SAMUEL BIGNOLD, M.R.C.V.S.L."

The plaintiff observed that the certificate referred to February 4th; and moreover, if he had a horse examined he always made it a rule to be present and see it done himself. In reply, the defendant said the animal was all right and everything he had represented. A few days afterwards the plaintiff heard the defendant had called again; so on July 4th he sent a letter, enclosing cheque, in which he wrote: "I purchase this horse on the distinct understanding that you warrant him quiet to ride and drive, and sound; but with reference to the latter, if you prefer it, subject to my Veterinary Surgeon's examination." To this letter no reply came, but in due course the cheque was returned through the bankers, and was endorsed by defendant. The plaintiff stated he went away for some time again; but early in August—about the 12th—he was driving this horse for the first time to Whetstone, about eight miles from London, and when near the town the horse shied, reared, and appeared greatly excited. He jumped out of the phæton, discovered the horse was bleeding at the nose and very uneasy. He left it at Whetstone for the night, and drove it back next morning. The journey was very gently performed; he did not hurry it, and his grooms had duly exercised the horse daily with the others.

When he arrived home he mentioned what had happened to the groom, who said it might arise from a "wen" he had discovered in the neck. He mentioned the matter on one occasion to Mr. Rea, and also that he found the horse had a peculiar way of gaping and tossing its head. The defendant replied that all this was "freshness," and that one of his bits would put matters right.

On the 31st of August the plaintiff consulted Mr. Ward about one of the grey horses he had previously bought of the defendant for one hundred guineas, with reference to its soundness. Mr. Ward had the animal taken to Mr. Allen's riding-school, and whilst examining its wind discovered it was a "whistler." The plaintiff had sold this horse to a relative, subject to Mr. Ward's opinion, but the purchase was not completed in consequence; this horse was also warranted. He requested Mr. Ward to call next morning and give his opinion on the bay horse. Mr. Ward came, and as soon as he entered the stable he said the horse was a confirmed "wind-sucker"; was

nearer nine years old than six; and that if the Veterinary Surgeon had stated this animal to be six, the teeth must have been "bishopped," and they appeared to have been tampered with. The ears he found had been brought together by elastic bands, they being now lopped. Mr. Ward left the following certificate:—

"This is to certify I have this day, by order of Mr. Messent, carefully examined a bay gelding, aged, and I pronounce him to be unsound from laryngeal disease, wind-sucking, and defective vision.

"(Signed) ROBERT WARD, F.R.C.V.S."

The plaintiff was told by him that he had better send the horse away, for it was very likely to be taken seriously ill from the "wind-sucking," particularly if idle in the stable.

Plaintiff wrote to defendant stating the results of both examinations, asking if the defendant considered it was the right treatment to a customer who had been so lenient, to sell a horse with his ears tied up, with his teeth "bishopped," and a confirmed "wind-sucker"; but without prejudice offering to defendant the ultimatum of sending an experienced Veterinary Surgeon to meet the plaintiff and arrange the matter, or he would place the business in the hands of his solicitors. No reply was received, but one day the horse was taken seriously ill during plaintiff's absence. Mr. Dollar, jun., the usual veterinary attendant on the stud, was called, and said the horse would die. A telegram was sent to defendant to that effect, but no notice was taken of it. Mr. Ward was called in to consult with Mr. Dollar, and eventually the horse did recover; and on October 11th was sold by auction for twenty guineas at Park Lane Repository, the plaintiff's loss amounting to £69 9s. 6d. The plaintiff was subjected to a severe cross-examination by the defendant's learned counsel, but his evidence was not shaken.

The grooms bore evidence that the horse made "faces" or "grimaces" when it first came; but they did not know what it was, as they had never seen one like it before. The head groom admitted the defendant had given him a sovereign, and had promised him £5 if all went well with the horse. He forgot to tell his master about his discovery that the ears had been fixed by the elastic arrangements.

Mr. Robert Ward stated he was a Fellow of the Royal College of Veterinary Surgeons, of twenty-five years' experience, in practice now in the Harrow Road as a Consulting Veterinary Surgeon.

He said: On the 1st of September he went at plaintiff's request to his stables and examined the horse in question. Immediately he entered the stable he saw the horse "wind-sucking," and asked the grooms if they had noticed it; they said they had, but did not understand it. Examining the head, he found peculiar marks at the root of the ears, and the head groom said they were tied up with the elastic. The eyes were defective, the pupil dilated; this was the effect of nervous exhaustion, consequent on indigestion and digestive derangement from the wind-sucking. The larynx was enlarged, harder than normal, and distorted from the wind-sucking. The diseased condition must have been of some standing—certainly not of a week, but at least a year. In reply to his lordship, he said he considered wind-sucking a symptom of disease, and not a vice, as was erroneously supposed. His theory was that previous to the habit there existed a depraved condition of the digestive functions; the animal experienced a continuous feeling of hunger or desire to swallow something; the sympathetic and pneumogastric nerves became implicated to such an extent that the act, which should be voluntary, became involuntary. The habit was quite incurable; had never heard of an instance of cure; the disease increased; a horse, however slightly affected, would gradually get worse. It was, in his opinion, decided unsoundness. He quite

agreed with Professor Williams in his "Text-book of Veterinary Surgery," page 503, on Crib-biters and Wind-suckers. He was submitted to a rigid cross-examination by Mr. Charles Russell, Q.C., but the learned counsel failed to shake his opinion; he was very severe on the subject of Bishopping.

Mr. Ward produced a specimen of dentition from a subject seven years off this year, which should correspond with the horse's lower jaws if it was six off last year, as stated, and he handed the specimen to the jury for them to compare with the mouth of the horse which was outside the court for their inspection, and he was willing for Mr. Fleming to decide the matter as to age.

Mr. Ward said the animal was undoubtingly suffering from the effects of wind-sucking on the 23rd of September. The animal was in a tympanitic condition and in great pain; the Tympanitis was due to the wind-sucking; the pain was much increased by the chronic inflammatory condition of the digestive canal, especially the colon. He suggested hot rugs and medicated enemas. Mr. Dollar had treated the patient in the usual manner, and was quite right in applying the embrocation to the sides if the hair was removed.

Mr. Thomas Dollar, jun., said he was a member of the Royal College of Veterinary Surgeons, in practice with his father in Bond Street. He and his father attended plaintiff's horses. He was called to the horse on the 22nd September, and found the animal much distended and in great pain; he was suffering from Tympanitis and Colic impaction, caused by the wind-sucking; he was very ill—thought he would not recover. Mr. Ward met him in consultation; the horse did recover. Would consider a wind-sucker like this one unsound. The horse would be liable to indigestion and Colic. He knew Professor Williams' work, and agreed with him in his remarks on the habit, in page 503.

Mr. George Fleming said he was a Fellow of the Royal College of Veterinary Surgeons, a member of Council and the Board of Examiners; was now Veterinary Officer to the 2nd Life Guards. Had twenty-five years' experience. Had listened attentively to the evidence given by Mr. Ward, and quite coincided with it. "Wind-sucking" was most undoubtedly unsoundness; it would increase, and tend to shorten life—certainly to impair the animal's usefulness; and would produce alterations in the digestive organs, the walls of which would become thinner; the digestive functions would also become impaired. There was no cure; the habit would continue to increase; rupture of the stomach frequently occurred. In reply to his lordship, he said he should not pass such a horse for the Army under any circumstances; indeed, he would not have a horse in his regiment that was a wind-sucker, as other horses acquired the habit, and it would therefore be dangerous to other horses to allow them to stand with one so affected. Indigestion would arise from it, the vision would be affected during acute Tympanitis; the œsophagus would become dilated in time, and the larynx altered. He quite agreed with the opinion of Professor Williams in his work, page 503, paragraphs on Crib-biting and Wind-sucking.

His lordship then wished Mr. Fleming to accompany the jury to view the horse and explain the result of his examination to them, on behalf of the plaintiff; and Mr. Bignold was deputed by Mr. Russell to be present on behalf of the defendant. This ended plaintiff's case.

Mr. Russell, in defence, pleaded the serious consequences of the result of this trial to the defendant, whom he represented as a man of long experience as a dealer in horses, and who had been at one time employed as agent for the purchase of Government horses.

He said he would call two members of the college who would prove that the animal was sound when sold, was sound now, and he would produce the horse outside the court for the jury's inspection.

Mr. Rea, in examination by Mr. Russell, stated he had been in trade as a dealer many years. He did not warrant the horse; he knew it was a wind-sucker, but did not consider that an unsoundness—only a vice or bad habit; did not tell the plaintiff it was a wind-sucker. In reply to his lordship, and in his cross-examination he said he bought the horse at Tattersall's, on February 4th; Mr. Bignold advised him to buy it, as it was such a nice horse. Mr. Bignold had known it for some time. He gave thirty-eight guineas for it; in the yard Mr. Bignold gave him the certificate produced in court, he paid Mr. Bignold half-a-guinea for it; did not know at the time it was a wind-sucker; found it out soon after. He left the plaintiff to find it out, as he had done; he told plaintiff the horse was "workably sound." His lordship here remarked that a horse to be sound must be workable—did the defendant understand that? Defendant said he considered a wind-sucker workably sound. His lordship then read the definition of the term "unsoundness," according to the late learned judge, Baron Parkes. If at the time of sale the horse has any "disease" which either actually "does diminish" the natural usefulness of an animal, so as to make him less capable of work of any description, or which in its ordinary progress will diminish the natural usefulness of the animal, this is unsoundness; or if the horse has, either from disease or accident, undergone any alteration of structure that either actually *does* at the time or in its ordinary effects *will* diminish the natural usefulness of the horse, such horse is unsound.

Defendant admitted receiving the letter and cheque referred to by plaintiff, the endorsement on the cheque was his; he did not reply to the letter; took no notice of the remarks therein. His son fixed the elastic bands to the ears, he did not tell the plaintiff about them; he told the groom. The horse was seven years off now.

The son of defendant corroborated his father in most particulars; he knew the horse was a wind-sucker, but said nothing about it.

The ostler who was with defendant at the time was called. He said he soon discovered the horse was a wind-sucker—in about a fortnight; had driven the horse—he went well; considered him a sound horse.

Mr. Samuel Bignold said, he was a member of the Royal College of Veterinary Surgeons. Remembered examining the horse on February 4th, last year; the certificate produced of that date was his; he did not know the horse was a wind-sucker.

His lordship referred to the wording of the certificate: "I do not detect any unsoundness," and asked, Supposing a horse was blind of an eye—the off, for instance—and was placed against a wall, the right side to the wall, and if he was asked by any one—perhaps, myself, said his lordship—"Do you detect any unsoundness?" you would and could say, I do not detect any unsoundness.

Witness replied it was his custom to word his certificate always thus, or he should be always in a "law court."

His lordship replied that it was well for his clients to understand it.

In cross-examination by Mr. Philbrick, he said he had known the horse or three years; did not know it was a wind-sucker until that morning when Mr. Fleming and the jury examined it. He still considered it was sound, but should have stated that it was a wind-sucker on his certificate had he known it. The certificate of March last was his; he did not detect any unsoundness. The defendant requested him to examine the horse again as it was for sale. Did not say there was a trial pending; he knew nothing of this trial at the time, or would not have given the certificate. In reply to his lordship, he said he bought the horse for a client about three years ago of Mr. Smith of Pimlico—gave, he thought, ninety guineas for it. His client kept it some time. He then bought it himself, used it in his practice for about a month; he

gave £60 or £65 for it, but could not exactly say; he sold it to a client for 120 guineas; this client kept the horse some time—he thought about twelve months; he went to Australia, sent the horse into Tattersall's for sale, with a reserve of 100 guineas; did not sell the first time, it was then put up the second time without reserve, and sold for thirty-eight guineas. Defendant was the purchaser; never heard the horse was a wind-sucker whilst in his possession or since. Considered wind-sucking a vice, like crib-biting, not an unsoundness. Knew Professor Williams' work. Agreed that the description was right, but it was a bad or extreme case; had heard his lordship read Baron Parkes' definition of unsoundness; admitted wind-sucking did occasion indigestion and Colic; that wind-sucking was incurable. Did not in this case consider it an unsoundness. Had heard the evidence of Mr. Fleming and Mr. Ward; did not agree with them that the horse was unsound.

Mr. George Augustus Hall said he was a member of the Royal College of Veterinary Surgeons. He examined the horse in question for the present owner, Mr. Fredericks, in May last; he gave the certificate produced that the horse was sound. Saw the wind-sucking at once, directly he entered the stable. Did not consider it constituted unsoundness; the habit was not curable. Had heard the evidence of Mr. Fleming and Mr. Ward; did not agree with them that wind-sucking was an unsoundness; knew Professor Williams' work produced—it was a text-book; agreed with his remarks on Crib-biting and Wind-sucking, in paragraph referred to, on page 503, excepting that it was an unsoundness. Had heard his lordship's explanation of the term; wind-sucking, if bad, did occasion indigestion and Colic, and all disease must have a beginning. Had seen the horse that morning, and was still of opinion it was sound.

Mr. Gayton, horse-dealer, was the next witness called by defendant. He said he bought the horse at Park Lane repository, for twenty guineas; it was very poor-looking; he kept it till November, got it into good condition, sent it to Aldridge's and sold it for forty-nine guineas, to a Mr. Fredericks. He knew the horse was a wind-sucker; it worked well, was a nice horse; the present owner was pleased with it. In reply to his lordship as to whether he considered the horse sound, "As a practical man," he said, "I will speak the truth, my lord; the horse is perfectly sound, *bar* the wind-sucking." (Roars of laughter.)

Mr. Fredericks' groom was the last witness called by defendant. He said he drove the horse daily some thirty or thirty-five miles; it went well. Sometimes he drove it in the music-hall placard van, and other times in the carriage. His master was quite pleased with the horse; would not take eighty guineas for it now. When it came home, the grooms in the mews said, "You will have some trouble with this horse," for they saw and heard him wind-sucking; but the horse had never been ill or out of sorts.

The learned counsel, Mr. Philbrick, remarked that he must have had but little time to indulge in his habit of wind-sucking, if continually going thirty-five miles a day.

The court adjourned.

The following day Mr. Fullerton, in the absence of his learned colleague, addressed the jury for the defendant, calling their attention to the importance of the case to the latter, who had been charged with fraudulent practices in applying elastic apparatus to the animal's natural lop ears, the bishopping of teeth, as well as representing the animal as sound, knowing it to be unsound. He admitted that the animal was a wind-sucker—a patent defect or vice, and which the evidence of the professional witnesses went to show was not an unsoundness. The evidence in general was most forcibly laid before the jury, and he begged them to well weigh the position of defendant, a man in years.

Mr. Philbrick, on behalf of the plaintiff, said that with reference to the ears and teeth, or misrepresentation connected therewith, he would pass that over, and confine himself to facts. The questions he submitted to the jury were:—Did the defendant warrant the horse sound? and was the horse unsound? With reference to what was soundness and unsoundness, his lordship had already explained in his most explicit and learned manner—he could add thereto. With reference to the warranty, there was the letter before them, and the cheque endorsed; there was the admission of defendant that he said the horse was workably sound, and his lordship had explained that a sound horse must of necessity be workable—indeed, the question they had to decide was this, Was the horse a "wind-sucker?" This was admitted; then, was this an unsoundness or a vice. There was no doubt that the opinion of the professional gentlemen who had been heard was formed after due consideration, and it had to be borne in mind that the witnesses—Mr. Ward and Mr. Fleming—are not merely members, but fellows of the college—gentlemen holding the highest position, as scientific men, in their profession; and their evidence must be weighed against that on the other side.

His lordship, in addressing the jury, said the counsel for the plaintiff had forsaken the first part of the indictment—the charge of fraud—and very properly so; it was usual thus to bring these cases before the court. The matter for their consideration was simply this: Did the defendant warrant? and, if so, was there a breach of that warranty? He called their attention to the opinion on unsoundness he had read, on the authority of the late Baron Parkes. The question of warranty rested upon the letter and the cheque, also the evidence of defendant, that he did say the horse was workably sound, and he maintained it was so. That "wind-sucking" is an unsoundness, as well as a vice, you have the evidence of two professional gentlemen, who are, as the learned counsel stated, fellows of the college—the highest position in the profession; and they agree with the remarks of Professor Williams in his text-book. Against this, you have the evidence of the defendant's two professional witnesses, who maintain that a "wind-sucker" is not necessarily unsound, and who, although they agree with the general remarks in Williams' text, disagree with him on the point of unsoundness. You have the evidence of the horse-dealer, Mr. Gayton—whom I rather offended by alluding to the general custom of grooms to first remove the dealer's food before submitting the animals from their stables to work. He said, just as though it was unusual, "I will speak the truth; the horse was sound 'bar the "wind-sucking."'"

The evidence, his lordship continued, that the horse does work now, and does not appear to be the worse for "wind-sucking," is not the question; it is this: unsoundness, according to the meaning of the term.

On the question of damages, no damages are sought—only the amount of loss to the plaintiff between the original price of eighty guineas and that realized, with the expenses deducted—namely, £69 9s. 6d.

The jury consulted a few minutes, and returned a verdict for the plaintiff for the amount claimed.

His lordship certified for full costs.

Obituary.

THE following deaths have been reported by the registrar of the Royal College of Veterinary Surgeons. In the 44th year of his age, Mr. John Field, M.R.C.V.S., late Royal Artillery, who graduated in 1856; also Mr. Alfred Bland, M.R.C.V.S., Speenhamland, Berks, who received his diploma in 1863.

In the 34th year of his age, Mr. James Entwistle Mather, M.R.C.V.S., of Blackley, Manchester. His diploma bears date April 26th, 1869.

Army Veterinary Department.

Gazette, July 1.

VETERINARY DEPARTMENT.—The undermentioned veterinary surgeons on probation to be Veterinary Surgeons: Robert Moore, Francis Raymond.

Inspecting Veterinary Surgeon Tom Parinder Gudgin to have the local rank of Principal Veterinary Surgeon while serving during hostilities as the Senior Veterinary Surgeon at the Cape of Good Hope.

With regard to departmental and regimental appointments, the statements at page 61 of the Journal for July might mislead, and we therefore supplement them by some further remarks. We believe the general idea with regard to appointments is as follows:—All newly-appointed veterinary officers who are on the ten years' system will remain departmental during that period. This arrangement is for their own convenience, and to save them expense. On the expiration of the ten years, if retained for further service, they will be gazetted to corps if they wish it; but it should be understood that there is no hard-and-fast law. For example, a young veterinary surgeon just appointed may be gazetted at once to a corps after completing his period of probation; there is nothing to prevent this. On the other hand, a veterinary surgeon gazetted to a corps may be transferred to the department if he so wishes. By these means, both the regimental and departmental systems are retained, and veterinary surgeons have free scope. In this respect the veterinary system differs materially from the medical, and is a great improvement upon it. There are indications that, as time goes on, the departmental appointments will be more popular than the regimental ones. This is doubtless owing to the allowances being better, and there being no subscriptions to pay in the former; and also to a feeling of independence in the discharge of their duties which their position affords, for the less securely a good veterinary surgeon is tied to a commanding officer, the greater will be the consideration with which the latter will treat him, as he knows very well that if not contented, the veterinary officer can be readily transferred to another post.

An advantage of being gazetted to a cavalry regiment is, that the veterinary surgeon does not fall within the roster for foreign service. He may be detached for special duty for a time—as is the case with Mr. Steel, in Afghanistan, and others now in South Africa,—but may not be removed; so that those who are likely to seek cavalry appointments in future will be those who can afford the extra expense—for the cost of living in the cavalry is somewhat greater than in any other branch of the service—and who do not wish for foreign service. In making the selection for cavalry, those who have had the longest foreign service, and who possess also high professional qualifications, will have the preference. It is different with veterinary surgeons gazetted to the Royal Artillery, for so large a number are serving in India that they must all fall within the general roster. Duty with the Army Service Corps and depôts are also departmental appointments. Although the expense of living in cavalry is higher than in the other branches, yet veterinary surgeons under the new rates of pay can afford to live at mess and be otherwise very comfortable. With a salary of £250 a year, and no rent, rates, or taxes to pay, fuel, light, and servants found, and no forage to purchase, it is his own fault if a young veterinary surgeon cannot live tolerably well in the Army.

Notes and News.

CONTAGIOUS DISEASES IN THE METROPOLIS.—We find from the report of the Metropolitan Board of Works that the number of cattle affected with Pleuro-pneumonia within the metropolitan area in the years 1875, 1876, and 1877 was 638, 548, and 748 respectively; whilst in the year 1878 the number fell to 496. The most serious outbreak last year occurred in a herd of 115 animals, 55 of which were lost by disease, the outbreak lasting ten months. The value of the 496 animals slaughtered, as certified by the Board's inspectors, was £12,409 15s., and the amount received from carcasses, hides, etc., was £3,754 0s. 4d. The claims in respect of the 496 animals have been considered, and the sum of £2,170 15s. 10d. has been awarded in respect of the same. So far as the Board is aware no case of Foot-and-mouth Disease occurred in the cowsheds of the metropolis in 1878, and the inspector of the metropolitan market, Mr. S. J. Rayment, reported only three cases, which occurred early in the year; the diseased animals were carefully removed and slaughtered. At Eltham 35 sheep were affected with sheep-scab at the beginning of the year; none of them recovered although under treatment, and they were all slaughtered by the end of April. Three cases of the disease were discovered in the Metropolitan Cattle Market, the first in 34 sheep, the second in 22 sheep, and the third in 4 sheep. The animals were all seized and slaughtered at the market slaughter-house. Coming to Glanders and Farcy, we find that in 1876 and 1877 the numbers of Glandered animals reported were 431 and 276 respectively, and of animals affected with Farcy 242 and 210 respectively. In the year 1878 the numbers were 296 Glandered and 275 Farcied. These animals were all slaughtered and the carcasses destroyed at one of the licensed knackers, except 12 which were Farcied; and of these, 8 recovered and 4 remained diseased at the end of the year. Proceedings were taken by the Board in six cases against persons for using or sending Glandered horses through the streets, and in seven cases for not giving notice of the outbreak of disease. Convictions were obtained in nearly all cases, and fines imposed. Although the number of cases of Glanders and Farcy reported upon in 1878 was larger than in 1876 and 1877, it is so far satisfactory, as it is supposed to show that owners are becoming more convinced of the necessity of giving notice of the outbreak of disease and anxiety to free their stables of the source of the contagion. There is reason to believe that the number of cases returned do not nearly represent all the outbreaks of disease, although experienced persons express an opinion that the number of affected horses in use has been materially lessened. No outbreak of Cattle Plague or Typhoid Fever in swine was reported during the year.—*The Farmer.*

EFFECTS OF FUMES FROM SMELTING-HOUSES ON LIVE STOCK AND PLANTS.—In the *Archiv für wissenschaftliche und practische Thierhielkunde*, Professor Haubner, of the Dresden Veterinary School, publishes a lengthy series of papers on his observations, extending over more than twenty years, upon the effects of the emanations from the Muldener and Halsbrückener smelting works upon live stock and vegetation in the immediate neighbourhood. The ores here treated contain about 12 per cent. of sulphur, and 2.5 per cent. of arsenic in combination, and consequently give off arsenious and sulphurous fumes during the process of roasting. The latter, on escaping into the air, are oxidised into sulphuric acid hydrate, while the condensed arsenious acid, in conjunction with other earthy and metallic constituents, is distributed far and wide in the form of fine dust. The soil with which these emanations come in contact has a strong acid reaction, and is found on analysis to contain the constituents of the fumes; but no markedly injurious

effect upon plants grown in it can be demonstrated, though the vegetation suffers much by the direct action of the fumes, especially by those of the sulphuric acid. The plants become yellow, their leaves wither, shrivel up, and finally fall off; cereal crops are arrested in their growth. The arsenical dust appears to injure plants only in the same way as dust generally; while, on the other hand, it is most detrimental to live stock fed upon fodder that has been exposed to it. Such injurious effects are confined to oxen, because other kinds of live stock are either not kept at all in the district, or are fed on substances which are not exposed to the action of the fumes, such as grain, roots, etc. Rearing stock in the neighbourhood is absolutely impracticable, for they fall into a debilitated state which carries them off in three or four years, and there is no possibility of fattening them. The yearly rate of mortality among oxen ranges from 30 to 50 per cent. They are always in miserable condition, suffer much from diarrhœa and cough, and in the case of cows the secretion of milk is always deficient. The disease caused by inhalation of the sulphuric acid fumes is described by Haubner as the "Sour-sickness." Its most prominent symptoms are diarrhœa, chlorosis, acid reaction of fæces, urine, and milk, rheumatic pains in the joints, loss of flesh, inability to rise, fracture of bones, etc. Owing to improved methods of condensing the sulphuric acid, which have been recently adopted, the "Sour-sickness" is now little met with, but cattle still suffer much from cough and lung diseases, caused by the inhalation of arsenical dust adhering to their fodder. The presence of arsenic in the lungs has frequently been demonstrated. At least three-fourths of the affected cattle suffer from ulcer of the stomach, which frequently results in perforation and death.

VETERINARY DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.—The Philadelphia Society for the Prevention of Cruelty to Animals has issued an appeal to the citizens of Pennsylvania for the foundation of a Veterinary Department of the University of Pennsylvania. Mr. Coleman Sellers, in an address accompanying the circular, says that in Great Britain and Europe the skilful veterinary practitioner is respected for his skill, and is recognised as a man of science. The time has come when the United States will either have to import from abroad men skilled in veterinary science, or it must take immediate steps to put it into the power of its own citizens to acquire the information needed to improve the sanitary condition of their domestic animals. It is estimated that the cows and the land to support them represent a money value of 1,300,000,000 dols. These animals yield 350,000,000 pounds per annum of cheese; 1,500,000,000 pounds of butter, which, converted into money, stands at 350,000,000 dols. per annum, only one-fifth less than the corn crop of the land. We are said to export 13,000,000 dols. worth of butter each year, and 14,000,000 dols. worth of cheese, while the ocean freights on these exports cost 1,000,000 dols., and the railroad freights, 5,000,000 dols. per annum.

ILLINOIS INDUSTRIAL UNIVERSITY.—Mr. F. W. Prentice, M.R.C.V.S., M.D., has been appointed Professor of Veterinary Science in this University.

DISEASES OF ELEPHANTS.—The most common ailment amongst elephants is *Yaarba'hd*. It is of two kinds: one called dropsical *Yaarba'hd*, in which the neck, chest, abdomen, and sometimes the legs, swell with accumulations of water beneath the skin; the other is wasting *Yaarba'hd*, in which the animal falls gradually away to mere skin and bone. Both kinds are exceedingly fatal if they become established. They are most common amongst newly-caught elephants—in fact, hardly any such escape the affection to some extent. I have never seen a wild elephant suffering from it. The disease is induced by the radical change of food and habits undergone by

newly-caught elephants. Freedom from unnecessary restraint, liberty to graze at will, protection from all debilitating causes, such as exposure to the sun or inclement weather, are the best preventives and restoratives. Medicine is of little avail; and if the disease is once allowed to become serious, there is every probability of a fatal termination.—*Thirteen Years among the Wild Beasts of India.*

How Swine Plague is Spread.—A party of anglers, while at a weir at Kelston, between Keynsham and Bath, saw several carcases of pigs floating past in the river Avon, and a resident farmer, who kept pigs near the river, told them that they were the carcases of pigs which had died of Swine Plague and been thrown into the river. He had seen more than 60 of these carcases floating down during the last three weeks. The discovery has led to complaints being made as to the highly dangerous practice of throwing these carcases into the river at a time when, according to the report of the chief Inspector under the Contagious Diseases (Animals') Act, in the county of Somersetshire, there have been during the past three months no less than 35 outbreaks of Swine Plague in Somersetshire, and as many as 632 had been affected. Of these, 509 had been slaughtered by order of the local authority, and 123 had died of the disease. In reporting upon this state of things to the magistrate at the Somerset Quarter Sessions, the chief Inspector, Captain Foold, says the powers given to the local authorities by the Order in Council as to swine are not sufficient to enable them to deal effectually with that highly contagious disease. He suggests that application should be made to the Privy Council for the same powers as they now possess in dealing with Pleuro-pneumonia, with the exception that the limit of time within which no removal should be allowed for the infected place should be 30 instead of 56 days. These powers would enable the committee to declare premises infected, to order slaughter of swine which had been in contact with infected animals, and to dispose of the healthy carcases; and to declare when the restrictions should be removed. He also recommended the committee to apply for powers to prohibit the sale of pigs in markets within the petty sessional division where cases of Swine Plague occurred—a course which he thought would tend materially to check the spread of the disease. The recommendations were adopted by the Court, the period of quarantine, however, being extended to 40 days, the Chairman, Major Paget, observing that at present the Act only permitted the slaughter of diseased animals, whereas it was important that the power should be extended to all animals. The disease at present seemed to be in full swing, and it was almost impossible at that moment to tell the extent of the infection in the county. It is evident that the chief Inspector, Major Paget, and the Court of Quarter Session, understand the measures necessary for the control of Swine Plague.

The Oldest Horse in New York.—A correspondent, signing himself the "Owner of 'Yankee Boy,'" writes to say he has the oldest and best horse in New York. The horse was thirty-five years old on the 10th June. —*Turf, Field, and Farm.*

Cavalry Efficiency.—The *Army and Navy Gazette* of July 5 has the following:—"It is a remarkable fact, and one, we believe, without parallel in the history of the Household or even Line Cavalry, that the 2nd Life Guards marched into Aldershot on Tuesday with its full complement of horses—275 —all efficient. This most noteworthy state of affairs is due to the new system of remounting adopted in the regiment, by which horses not younger than four years are purchased. There was neither a young nor yet a sick or lame horse in the regiment on the occasion of its move. All were in splendid condition."

Parliamentary Intelligence.

House of Commons.—June 19th.

FOOT-AND-MOUTH DISEASE.

In the House of Commons, in reply to Colonel Kingscote, Lord G. Hamilton said: An outbreak of Foot-and-mouth disease amongst American cattle at Derby was reported to the Privy Council, and an inquiry was immediately instituted. From this it appeared that a number of cattle were brought from Canada and landed at Liverpool from the steamship *Dominion*. When landed they were twice inspected and examined, and were found to be free from disease. Eleven of them were purchased and sent on to Derby, and having been there found by the Local Government inspector to be affected with Foot-and-mouth disease, they were slaughtered. It is clear that the disease must have been contracted between the time they were landed and June 10, because they were inspected in Canada before leaving, and had they then had the seeds of the disease they would have developed during the voyage. Certain cargoes of cattle were also sent from Liverpool to Nottingham, but on examination they were not found to be affected by disease.

Correspondence, etc.

THE DISEASE OF GLANDERS IN THE HUMAN SUBJECT.

To the Editor of the Veterinary Journal.

Sir,—The above malignant disease, and its modified variety, Farcy, has from the earliest periods of history engaged the attention of learned writers, and even now in modern times the same interest is given to the investigation of the origin or cause of this most loathsome and fatal malady; yet with all our research and investigation the disease continues in this, the nineteenth century, as *rife* and *virulent as ever*.

This certainly is a subject for our most serious thought. Public and professional interest are alike deeply at stake; the former anxiously look to the men of science for measures of prevention, and the latter are expected to advance such measures.

Disease of such a fatally contagious nature, bidding us defiance in our endeavours in the curative art, must receive serious attention with a view to total suppression. "Sanitary Science" must be deeply studied, and when she has yielded that information sought, the authorities should be informed thereof and adopt those measures in the most stringent manner, to arrest the direful ravages of an enemy—not only to animals, but the human subject—of such an insidiously Protean type.

If our profession has done its duty, investigated and reported the result to the public, it is then free from public censure or the charges of professional incompetency, neglect, or apathy.

The application of measures of prevention does not rest with the profession, but with those especially deputed to guard the public against these fearful scourges. Now, if any apparent misapplication of the means or improvement in them occurs to a member of our profession, I take it to be a duty on the part of that member, not only to the profession, but the public, to draw attention to the fact, thus showing the latter we anxiously watch their interests in arresting those contagious or infectious diseases in our patients so dangerous to the community at large. With this object alone I draw your readers' attention to a recent case of death from Glanders and Farcy which

I saw at St. Mary's Hospital, Paddington, on Monday, April 14th. That the disease was Glanders and Farcy there was not the slightest doubt; and of the source from whence the subject received the contagium there is direct evidence, for the young woman it appears "kissed" the infant on one occasion, not knowing of course the fatal malady under which the poor little creature was gradually sinking; and it is somewhat marvellous none others of the household had received the disease by contagion; it is, however, to be hoped they are all now safe. The following is from the *Daily Telegraph* of April 18th:—

"EXTRAORDINARY DEATH FROM GLANDERS.—Yesterday Dr. Hardwicke resumed an adjourned inquest at the Paddington Coroner's Court, concerning the death of Emily Susan Hulbert, aged 18, who died from Glanders, contracted from horses whilst living with her parents in rooms over stables at 16, Colville-mews, Lansdowne-road, Bayswater. The deceased was a domestic servant, and being out of place went to live with her parents. The rooms occupied were over the stables of Mr. Bacon, a cab proprietor. After being there a week, the deceased complained that there were very bad smells from the stables, and whilst the mother was carrying an infant, aged fifteen months, down stairs, one of the horses, which was being watered near by, blew an amount of secretion from its nostrils on to the child, which afterwards was taken ill, and when taken to the surgery of Dr. Robertson was found to be suffering from Farcy and Glanders. Upon one occasion the deceased took up the child and nursed it. A few days afterwards she complained of pains in her arms, and this was followed by swellings and eruptions. She attended the St. Mary Hospital, where, upon examination, it was found that she was suffering from Farcy and Glanders, upon which she was admitted as an in-patient; but she gradually got worse, and died from the disease on Wednesday week, as also did the infant sister, who had been attacked with the same disease. The jury, after some consideration, returned the following special verdict: That Emily Susan Hulbert died in the St. Mary Hospital from the mortal effects of Glanders, contracted at 16, Colville-mews, Bayswater, her sister having previously died from the same disease. The jury are further of opinion that the provisions of the Contagious Diseases (Animals Act) of 1878, with reference to the outbreak of Glanders and to the treatment and disposal of the carcases of horses suffering from such diseases have not been duly carried out. It further appears that the provisions of the Slaughter-house (Metropolis) Act of 1874 have been violated by the carrying on of a trade by an unlicensed knacker. The jury further desire that the facts given on evidence should be brought before the Privy Council, and such steps taken to avoid, if possible, the recurrence of such accidents as these in future."

It will be observed that the jury expressed an opinion that the provisions of the Contagious Diseases (Animals) Act had not been carried out; "that the animal or animals had been treated medicinally against the statute. The Veterinary Surgeon who was called in stated that he told the owner the nature of the disease, and that the animal should be destroyed.

Now it appears some other measures than those generally adopted in such cases should be advanced. Should it not be incumbent on the Veterinary Surgeon to report the nature of the disease to those in whose hands the carrying out of the orders are entrusted, instead of being left to the owner of the animal? Or, better still, if, instead of appointing private practitioners as veterinary officers, these were appointed by the Privy Council, "for that duty solely," as suggested by you, Mr. Editor, in your excellent work, "Manual of Veterinary Sanitary Science and Police" (Introduction, page xv). It is rather astonishing those at the head of the Department have not long

since seen the force of your arguments ; surely they must have carefully read your works on the subject. However this may be, let us reason for a moment—a Veterinary Surgeon is called to look at a sick animal ; he finds the case one of Glanders ; he tells his client so, and further, that the animal should be at once destroyed, the stable well disinfected, etc ; and that the police should be informed—but this latter advice is optional—takes his fee, and returns to his duties. Now, is it likely he would go to the next Veterinary Surgeon, his opponent, with whom—as I am grieved to say it is but too frequently the case with us—he is on the most *unfriendly* and unprofessional terms, to inform him, or even allow his client to do so, and risk losing his client on a future occasion? Although it may be that in some cases practitioners are on friendly terms, yet there is that feeling of jealousy between the one who has the appointment and those who are practising in the immediate vicinity.

Moreover, the duty of the Veterinary Sanitary Inspector is a far too important one, one would think, that for economy's sake a small portion of a busy practitioner's time should be hired. Is it not the duty of such an officer—if one existed—to thoroughly investigate all such cases as this one under notice, discover its origin, search out how many animals have been removed from the stables, trace them, then report thereon—how much easier for such an officers to do this, and how quickly will he be assisted by the private practitioner? Reverting to the question of economy. A certain number of these veterinary officers would be obtained to efficiently perform the duties now divided among an unlimited number of private practitioners, and at the same expense as that now incurred.

That for months, if not years, horses have been indiscriminately slaughtered in the locality, "an *unlicensed* place," seems astounding, and is another very plain argument for reform in this most important department of sanitary science.

How many cases there are in London of a similar nature no one would venture a guess, or how many score cases of Glanders and Farcy have never been reported during the last or present year those in office in this department can form no adequate idea. Should this be so? Certainly not. However, the attention of those in power will now be drawn to this important and sad case of death from Glanders, the animal communicating the contagion not being reported, and the jury's wise desire that the Privy Council should take steps to avert a recurrence of such a melancholy death.

"Out of evil cometh good." May such here obtain, and a sound system of sanitary science and police emanate, is the earnest wish of

Yours obediently,

ROBERT WARD, F.R.C.V.S.

[We have been informed from several sources that Glanders is still rife at Notting Hill, several new cases having been "reported." We trust that measures may soon be adopted whereby the "reporting" will not be so much a matter of chance.

For the public safety some better system of inspection should be devised. Our suggestions are already before the public and the authorities, in our "Manual of Veterinary Sanitary Science and Police." We cannot add thereto, but hope some better scheme than at present exists may be adopted, and if our manual can assist in any way, we shall be thankful.

It does, however, appear strange that we have a police without a duly appointed veterinary staff, and that we should have a Board of Works with sanitary powers lacking also qualified veterinary officers. Can this be an oversight? If so, the remedy is easy. But if intentional, why?

Surely the appointment of such useful officers would not make matters worse, and we think a trial may be made with advantage. Something must be done, or when will Glanders cease to scourge us?]

CASTRATION BY THE ECRASEUR.

To the Editor of the VETERINARY JOURNAL.

SIR,—Perhaps some of your numerous readers will kindly volunteer some information relative to castration by the écraseur method. A description of the *modus operandi in full*, danger of hæmorrhage, and general advantages over the less modern system would, I am sure, be very much welcomed by the majority of your subscribers. Yours, etc.,

X. Y. Z.

CASTRATION OF CRYPTORCHID HORSES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—Having heard from many professional friends, during the past four months, of the satisfactory operations performed by Farmer Miles upon ridgling horses, I was induced when in London last month to call upon him. I found myself in the company of a gentleman of most unassuming manners and of great intelligence, possessed of most honourable feelings towards our profession, which he is most anxious to assist so far as he may be able.

I have witnessed his operation upon twenty-eight horses—rigs and stallions—and do not hesitate to say that it is original, humane, safe, and expeditious.

It is not my intention to puff Mr. Miles, but I consider it a duty I owe the profession to point out the mistake the members of the Royal College will make if they allow this man to leave the country without having witnessed his system of castrating, or studied his method of securing the animal, which is unequalled either for the operation of castration, or for most of the ordinary operations required to be performed on the horse.

Yours faithfully,

BEN. H. RUSSELL, Captain, F.R.C.V.S.

Grantham, *July 8th.*

VETERINARY SURGEONS IN INDIA.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—With reference to your statement in last month's Journal, "that the pay of Inspecting Veterinary Surgeons in India was to be increased by £250 a year, and the other ranks in proportion," I wish to remark that if the said £250 be divided in the same ratio as the £2,664 granted under the warrant of 1878, a veterinary surgeon under five years' service will get nothing. One over five, and under ten years' service, would get one-fourteenth, or about £16 a year! Well, I suppose the heads of departments know best what the rank and file are worth, and if I have a chance of getting £16 a year more in India, I shall take it and be thankful. I confess, however, that I am somewhat sceptical about it, and would gladly commute my claim for a small sum down; for in my humble opinion the proverbially difficult task of extracting "butter from a dog's throat" is mere child's-play compared with that of extracting a fair share of public money from the persons who have the power of distributing the same.

Yours truly,

"POOR BUT HONEST."

PRESENTATION AT COURT.

To the Editor of the VETERINARY JOURNAL.

SIR,—Those of your readers whose feelings may have undergone a shock on being informed that the veterinary surgeons in Her Majesty's Army are ineligible for presentation at Court, will, I feel sure, regret to be further informed that the fate of the individuals so excluded is far more terrible than appears at first sight; for it would seem their disability is to follow them into the next world. If any faith can be placed in the words of Shakespeare, the veterinary officers are undoubtedly in a bad way, and likely to find themselves somewhat worse off in the future state than the present; being bereft of all those collateral advantages and sources of comfort which, although coming under the heading of worldly "vanities," tend nevertheless to ameliorate their condition so long as life lasts.

Let Touchstone explain.

"*Touchstone.*—Wast ever in court, shepherd?

"*Corin.*—No, truly.

"*Touchstone.*—Then thou art damned.

"*Corin.*—Nay, I hope.

"*Touchstone.*—Truly thou art damned; like an ill-roasted egg, all on one side.

"*Corin.*—For not being at court? Your reason.

"*Touchstone.*—Why, if thou never wast at court, thou never sawest good manners; if thou never sawest good manners, then thy manners must be wicked; and wickedness is sin, and sin is damnation. Thou art in a parlous state, shepherd."

Those who care to follow the dialogue will, I think, have little doubt that in the character of *Corin* we have an embryonic veterinarian, as well as a shepherd.

I am, Sir, your obedient servant,

Woolwich, *July 7th*, 1879. "VETULA AVIS."

GLANDERS IN INDIA.

To the Editor of the VETERINARY JOURNAL.

SIR,—My attention has been called to an article in your Journal for May last, under the heading of "Editorial," on Glanders and Farcy, in which it is stated that the contagion "has manifested itself in the valuable Saharunpore Stud." As I hold veterinary charge of the Government Remount Depôt at that station, I beg to state that there is no foundation for such a report, as there have been no cases of Glanders or Farcy, or any other form of malignant or infectious diseases amongst the Government horses at that depôt. There was an outbreak of malignant disease, and both Glanders and Farcy, amongst the *dâkh* and station horses last autumn at Saharunpore, which I reported to the civil authorities at the time, and I shot several horses before the arrival of veterinary surgeons Anderson and Poyser, who were sent on special duty in the district to report on the disease; but there were no cases in the Stud or Remount Depôt, as special precautions were taken by me to prevent the contagion reaching the Government horses, and I am happy to say with success up to the present time.

Trusting that you will insert this contradiction in your next issue,

I remain, Sir, yours truly, GEO. KETTLEWELL,
Staff Veterinary Surgeon, Bengal Army.

Landour, India, *June 16th*, 1879.

[The statement that Glanders had appeared in the Saharunpore Stud, appeared in several Indian newspapers sent to us. We are happy to learn that the report is unfounded, and that, owing to the measures adopted by Mr. Kettlewell, the establishment escaped contamination.]

COMMENTS.

There is a strange weakness in the human mind with regard to the pretensions of impudent charlatans, who profess to do anything and everything in the way of curing disease. This weakness is apparently inherent in every race of mankind —from the savage, who has his medicine man, to the civilized Briton, who has his Holloway, Morrison, and other cure-all medicine men. The following will show that in Madras, also, the cunning native is not above taking advantage of this oftentimes dangerous weakness.

MOST IMPORTANT NOTICE.

A Perfect Cure for Cholera.

THE undersigned begs to inform only the wealthy ladies and gentlemen of Madras he will guarantee to cure Cholera, and he will be very happy to grant insurance from Rs. 500 to Rs. 2,000, in curing case if required. For every visit, Rs. fifty, ready cash and prepaid. Please apply to M. A. APPAROW MOODELLIAR, Cholera Doctor and Royal Pegu Pony Merchant and Commission Agent, Mount Road.

IMPORTANT VETERINARY NOTICE.

For Sale.

Wonderful Horse Medicines.					Valuable Pony and Horse Medicines.				
For condition, a dozen balls			Rs.	6	Hard Breathing	...	...	Rs.	6
Do. Fever	do.	...	,,	6	Farcy ...	...	...	,,	6
Do. Cold	do.	...	,,	6	Gripes or Bellyache	...	...	,,	6
Do. Coughs	do.	...	,,	6	For Glanders or Quinsy		...	,,	6

THE undersigned begs to inform ladies and gentlemen possessing valuable horses and ponies, that having for more than eighteen years had much experience in the above line of business, he has prepared the above new Pills, which will effect a positive and immediate cure without bleeding, blistering, cutting, or any other injury being done to the sick animal, and will save great inconvenience and expense, or loss of the animal to the owner. He will also guarantee and insure according to the value of the animal; and further, he will undertake also to cure the animal on written contract without receiving any sum beforehand. If not cured, no charge whatever will be made, and he will prove that none of the above diseases are *not* contagious. M. A. APPAROW MOODELLIAR, Royal Pegu Pony Merchant, Next to the Round Tannah, Mount Road.

P.S.—Gentlemen requiring his personal attendance will be pleased to intimate the same. Charge for each visit, Rs. 10.

At a recent meeting of the Limerick Guardians, Mr. Thomas M'Mahon Cregan remarked that one of the most celebrated veterinary surgeons in Limerick, *Mr. R. Dyer, had given it as his opinion recently that there was no such thing as contagious Pleuro-pneumonia in the country.* Subsequently the clerk (Mr. Wilson) reported that the guardians had been served with a process for £15 by a farmer named Murphy, who alleged that a cow of his, suffering from Pleuro-pneumonia, had died through the alleged negligence of the board's officer, thereby debarring him from getting the compensation now sought to be obtained. Mr. James G. Barry remarked that in the present case it was *curious to find that Mr. Dyer, who, as stated by Mr. Cregan, asserted that there was no Pleuro-pneumonia in the country, certifying that Murphy's cow had died from that disease* (laughter). The veterinary inspector had certified that the cow in question had not died from the disease. The guardians unanimously resolved on defending the action.

Mr. Dyer, we regret to observe, has on several occasions written to the Irish newspapers denying the existence of contagious Pleuro-pneumonia in Ireland—or indeed, anywhere else; and it is still more to be regretted that, in order to support his assertion, he has had recourse to serious misstatements. For instance,

in a letter from him, and which appeared in the *Irish Times* for June 14th, allusion is made to the experiments at the Brown Institution, and an entirely inaccurate description is given of them, as a reference to the report which is published in this Journal will prove. We are quite astonished that a member of the profession should not only deny the infectiousness of this disease, but resort to such a course to substantiate his mistaken notions. We print his letter below.

PLEURO-PNEUMONIA AND THE BROWN INSTITUTION OF LONDON—A STARTLING REPORT.

To the Editor of the IRISH TIMES.

SIR,—Experiments have been instituted at this establishment during the past three years—from 1876 to 1879—for the purpose of determining in what manner Pleuro-pneumonia can be produced. It appears from the report, which will be found in the May number of *The Veterinarian*, that one of the most eminent pathologists has laboured for the past three years in attempting to produce Pleuro-pneumonia in cattle, without success. It is stated in that report that a batch of seven cows was placed in a shed which had been inhabited by cows suffering from this disease, and that this batch was mixed with cows at the time affected with it. These seven cows remained for three, four, and six months exposed to infection. They were all slaughtered, and the lungs were perfectly healthy. Injection of virus from a Pleuro-pneumonic beast was tried; pieces of diseased lung were inserted under the skin; virus was given by way of drench; injections of virus were tried through the venous circulations—all failed.

Now, sir, what are we to learn from this? I take it that the more we know of the disease called Pleuro-pneumonia the less we comprehend of its contagious or infectious character. An eminent authority has asserted that infection or contagion is certainly produced by excreta of a diseased animal; by the clothes worn by a person being in contact with a Pleuro-pneumonic beast, and other strange things. This appears to be at last exploded; and, so far as I can understand the report of the proceedings recorded at the Brown Institution of London, that actual contact has failed to produce the disease known by the name of Pleuro-pneumonia. It seems to me somewhat singular that not one member of the profession has, so far as I have seen, made any comment upon this extraordinary report, although it appeared last month in print. It may not be generally known that there are two publications issued in London every month—one is *The Veterinarian*, a very old-established periodical; and a recent issue, THE VETERINARY JOURNAL—both edited by men of undoubted ability.

What are we to learn from the result of these experiments? It does not require that men should possess the greatest amount of intelligence to come to the conclusion that the affection which is causing the loss of a large quantity of flesh-food by slaughter and burial, as well as the loss of money to ratepayers, is at best a questionable as well as a doubtful one. It may be asked, What case is and what is not contagious? After carefully reading the report alluded to, I can come to no other conclusion than that which I have often boldly asserted.—Yours, etc.,

Limerick, *June* 10, 1879. R. H. DYER, M.R.C.V.S.

In the prospectus of the American Veterinary College, just issued, it is stated that "the Board of Trustees have determined that the proposed change in the requisites for graduation, requiring attendance upon 'three, instead of two full courses of lectures,' be for the present deferred. This decision was arrived at in response to the numerous expressions of regret received from students from all parts of the country, stating that owing to the stringency of the times, they would be unable to afford the additional expense of living in the city, which such regulations would entail upon them." The decision of the Board of Trustees is to be deplored, as all who have any experience in veterinary teaching and practice know full well that a few months' course of lectures are totally inadequate. In this country

it is found that even the three years' course of study is insufficient, and those who are best acquainted with the requirements of the profession are of opinion that four years' study would not be more than barely sufficient to prepare students for the duties of their calling. America has as much need of properly trained veterinarians as this country; but she will never obtain them if the students are to fix their own course. They certainly should not be allowed to be the judges and arbiters in the matter of veterinary education.

ANSWERS TO CORRESPONDENTS.

R. WEST.—We are not aware that Prof. Law's treatise on Castration is yet published. You shall be informed as soon as we hear.

"DUM SPERO SPIRO."—There is no work of the kind in our language. Bruckmuller's is the only treatise, and that is in German.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. J. Masters, Royal Artillery, Newcastle-on-Tyne; Professor Lyford, Roscoe, Connecticut; J. Rowe, London; R. Ward, London; "Veritas"; P. Beattie, Bogfern, Aberdeen; W. D. Sartin, Royal Artillery, Woolwich; A. E. Macgillivray, Banff; Captain Russell, Grantham; "Poor but Honest"; W. Day, Warminster; W. S. Careless, Lincoln; R. West, Redhill; J. C. Dwyer, Royal Horse Artillery, Woolwich; "Dum Spero Spiro"; "Vetula Avis"; G. Kettlewell, Landour, India.

BOOKS PAMPHLETS, ETC.: *A. Offenburg*, Geheilte Hundswuth beim Menschen; Annual Announcement of the American Veterinary College; *H. B. Sands*, Spasmodic Stricture of the Urethra; *A. Johne*, Ueber die Ursachen der Mauke oder Schlampemauke des Rindes; *F. Gutsch*, Anleitung zur Ausübung der Fleischbeschau; Catalogue and Circular of the Illinois Industrial University; *E. Dele*, De L'Inoculation Preventive de la Pleuropneumonie; *A. Liautard*, Vade Mecum of Equine Anatomy; *N. Cressy*, Natural History of Bezoar Stones, Calculi, etc.; *C. A. Cameron*, Report on an Epidemic of Fever caused by Infected Milk; *W. Craig*, Notes on a Rare Congenital Malformation of the Leg.

JOURNALS: *Oesterreichische Vierteljahresschrift für Wissenschaftliche Veterinarkunde; Wochenschrift für Thierheilkunde und Viehzucht; Recueil de Med. Vétérinaire; Archives Vétérinaire; Annales de Méd. Vétérinaire de Bruxelles; Lancet; Medical Press; Farmer; Mark Lane Express; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Journal of the National Agricultural Society of Victoria; L'Echo Vétérinaire; Moore's Rural Life; North British Agriculturist; American Veterinary Review; Revue Vétérinaire.*

NEWSPAPERS: *Irish Times; New York Herald; New England Farmer; Nottingham Evening Post; Champaign Times; Melbourne Argus; American Turf, Field, and Farm; Dundalk Herald; Norwich Argus.*